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Artificial Intelligence in Clinical Pharmacology: From Code to Cure

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Introduction

Artificial intelligence (AI) is rapidly reshaping clinical pharmacology by enhancing drug discovery, dose optimization, and individualized therapy. With tools like machine learning (ML), deep learning (DL), and natural language processing (NLP), Artificial intelligence can manage complex datasets and provide predictive insights that were previously unattainable.

Materials & Methods

This systematic review synthesizes findings from four open-access peer-reviewed articles published between 2018 and 2024, focusing on Artificial intelligence applications across various domains of clinical pharmacology. Articles were selected based on their relevance to AI-driven methods in pharmacogenomics, drug repurposing, therapeutic drug monitoring, and clinical trial optimization. Key inclusion criteria included methodological rigor, clinical applicability, and reported outcomes.

Results

Artificial intelligence demonstrated substantial utility in early-phase research through target identification and molecular design using models like GANs and reinforcement learning. In clinical practice, AI-assisted models improved dose recommendations, predicted adverse drug reactions, and supported patient stratification using real-world data. Integration with electronic health records (EHRs) and wearable devices enabled continuous treatment monitoring. NLP tools facilitated the extraction of structured data from clinical notes, advancing pharmacovigilance and real-world evidence generation. Artificial intelligence also enhanced pharmacogenomic applications, such as CYP2D6 phenotype prediction, outperforming conventional models. Despite these advancements, challenges remain, including data heterogeneity, algorithmic bias, and concerns around interpretability and privacy.

Conclusion

Artificial intelligence holds great promise for revolutionizing clinical pharmacology by enabling smarter, safer, and more personalized drug therapy. However, realizing this potential requires overcoming technical and ethical barriers. Future research should emphasize transparent model development, diverse data inclusion, and interdisciplinary collaboration to ensure Artificial intelligence is effectively and ethically integrated into clinical practice.

Article Number: 116

The Effects of Curcumin on Skin Flap Survival in Mice: An Experimental Study

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Introduction

Skin flaps play a vital role in reconstructive surgeries. Necrosis of skin flaps remains a significant challenge in reconstructive surgery, largely due to ischemia and oxidative damage. Curcumin, a bioactive compound derived from Curcuma longa, is known for its potent antioxidant, anti-inflammatory, and angiogenesis promoting properties. This study investigates the potential of curcumin to improve the survival of ischemic random pattern skin flaps in a mouse model.

Materials & Methods

Thirty adult male mice of the same strain were randomly assigned into three experimental groups (n=10 per group). All animals were anesthetized using an intraperitoneal injection of a standard anesthetic agent. Following a single dose of prophylactic antibiotic, a caudally based random-pattern dorsal skin flap (3 × 9 cm) was created in all animals, based on the modified McFarlane's method. In the control group, mice received an intraperitoneal injection of normal saline. In the vehicle group, mice were administered an intraperitoneal injection of a vehicle solution composed of dimethyl sulfoxide (DMSO) and corn oil. In the treatment group, curcumin was administered intraperitoneally at a dose of 25 mg/kg body weight, dissolved in the same DMSO/corn oil vehicle, once daily for 14 consecutive days. At the end of the two-week treatment period, the dorsal skin flaps were photographed using a digital imaging system under standardized conditions. The necrotic area of each flap was quantitatively analyzed based on photographic documentation.

Results

Administration of curcumin significantly enhanced skin flap viability and improved blood flow in the ischemic region compared to both the control and vehicle groups. Mice in the curcumin-treated group exhibited visibly reduced edema and a marked decrease in the necrotic surface area of the skin flaps. Histological and macroscopic evaluations revealed enhanced angiogenesis, reduced oxidative stress, and inhibition of apoptosis in the ischemic tissue. The reduction in necrosis in the curcumin group was statistically significant when compared to both the control and vehicle groups ($p < 0.05$), confirming the therapeutic efficacy of curcumin in promoting skin flap survival.

Conclusion

Curcumin effectively enhanced the survival of random-pattern skin flaps in vivo by promoting angiogenesis, reducing oxidative stress, and inhibiting apoptosis. Overall, the findings of this study highlight the significant therapeutic potential of curcumin as a promising pharmacological agent for improving skin flap viability and supporting tissue regeneration in reconstructive surgery.

Article Number: 115

The Role of Clinical Pharmacist in Managing Polypharmacy and Antidepressant Therapy in Hospitalized Chronic Disease Patients Using Artificial Intelligence: A Novel Approach to Optimizing Pharmacotherapy

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Introduction
Patients with chronic diseases such as diabetes and heart failure often suffer from comorbid depression, requiring simultaneous antidepressant therapy. Polypharmacy in this population increases the risk of drug interactions, adverse effects, and reduced therapeutic efficacy. The clinical pharmacist plays a vital role in identifying and addressing these challenges. Recently, artificial intelligence (AI) has emerged as a supportive tool in clinical decision-making, providing novel strategies for enhancing medication safety and individualized care.
Materials & Methods
This narrative review aimed to evaluate the combined impact of clinical pharmacy interventions and AI tools in managing polypharmacy and antidepressant use in hospitalized patients with chronic diseases. A literature search was conducted across PubMed, ScienceDirect, Google Scholar, and ClinicalTrials.gov for the years 2015–2024, using the keywords “Polypharmacy”, “Clinical Pharmacist”, “Artificial Intelligence”, “Antidepressants”, “Chronic Diseases”, and “CDSS”. A total of 30 relevant articles were reviewed. The focus was on patients hospitalized due to diabetes or heart failure, receiving concurrent antidepressants, where AI tools such as Clinical Decision Support Systems (CDSS) or drug interaction prediction algorithms were used. Studies demonstrated that the involvement of clinical pharmacists in interpreting AI-generated data and adjusting medication regimens significantly reduced medication errors, improved identification of high-risk interactions, and enhanced overall treatment effectiveness.
Results
Findings across studies indicated that the integration of AI systems with clinical pharmacy services led to a reduction in severe drug interactions, improved prescription quality, shortened hospital stays, and fewer adverse drug events. AI-assisted tools also supported pharmacists in evaluating psychiatric status, optimizing drug regimens, and improving the therapeutic outcomes in patients with chronic diseases and depression.
Conclusion
Integrating the clinical pharmacist’s expertise with AI technologies offers a promising strategy for improving medication safety and therapeutic outcomes in hospitalized patients with chronic conditions and comorbid depression. This combined approach enhances the precision and efficiency of pharmacotherapy by supporting early risk detection and personalized treatment. It is recommended that AI-assisted systems be routinely employed alongside clinical pharmacists in hospital settings to ensure safer and more effective patient care.
Article Number: 161

A 3-Year-Old Child with Incidental Intoxication Caused by a Non-Prescribed High Dose of Vitamin D: A Case Report and Literature Review

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Introduction

Vitamin D toxicity, though uncommon, can be serious and is often the result of excessive intake of non-prescribed supplements. Its clinical presentation ranges from being symptom-free to showing severe signs associated with elevated calcium levels in the blood.

Case Presentation

We present the case of a 3-year-old child who unintentionally consumed 800,000 units of vitamin D without any prior health issues. The child remained asymptomatic during examination. Treatment consisted of intravenous fluids, corticosteroid therapy with prednisolone, and regular monitoring of serum calcium and vitamin D levels.

Conclusion

Standard care for vitamin D overdose includes rehydration, steroid administration, and possibly antiresorptive agents. Early recognition, cessation of vitamin D intake, and close biochemical monitoring are vital to successful management.

Article Number: 204

Successful Treatment Strategy for a Young Woman Diagnosed with Homozygous Familial Hypercholesterolemia, Who Was Effectively Treated with Evolocumab (PCSK-9 Inhibitors): A Case Report and Review of the Literature

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Introduction
Homozygous familial hypercholesterolemia (HoFH) is a particularly rare clinical problems related to genetic disorder, which characterized by markedly elevated levels of Low-Density Lipoprotein Cholesterol (LDL-C).
Case Presentation
This case report details the successful treatment of a 23-year-old Persian woman diagnosed with phenotypic homozygous familial hypercholesterolemia (HoFH) who was previously unresponsive to standard therapies. The patient presented with clinical signs including corneal arcus and xanthomas, alongside a significant family history of hypercholesterolemia and premature myocardial infarction.
Results
Initial treatment with high doses of Rosuvastatin and Ezetimibe failed to achieve target LDL-C levels. Subsequently, treatment with Evolocumab, a PCSK9 inhibitor, was initiated, resulting in satisfactory LDL-C control and partial regression of xanthomas.
Conclusion
This case underscores the potential efficacy of PCSK9 inhibitors in managing very high risk HoFH patients, despite the common perception of limited response due to genetic mutations affecting LDL receptor activity especially when Genetic conformation tests aren't available.
Article Number: 6

Compound Screening for Mitochondrial-Targeted Neuroprotection in Glaucoma

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Introduction

Glaucoma is a group of eye diseases characterized by progressive optic neuropathy and irreversible blindness. While intraocular pressure (IOP) remains a primary therapeutic target, many patients continue to experience disease progression despite IOP-lowering treatment, emphasizing the role of alternative mechanisms such as mitochondrial dysfunction, oxidative stress, and metabolic imbalance. Retinal ganglion cells (RGCs), with high energy demands are highly dependent on mitochondrial activity. In glaucoma, mitochondrial failure leads to Adenosine triphosphate (ATP) reduction, oxidative damage, and apoptosis. These findings have driven interest in metabolic neuroprotection as a therapeutic strategy. Notably, certain compounds capable of modulating energy metabolism and increasing mitochondrial resilience are now emerging as promising candidates for neuroprotection in glaucoma.

Materials & Methods

We searched the following databases PubMed, Scopus, ScienceDirect, and Web of Science, over the years 1990 to March 2024. Only articles in English were reviewed and the relevant publications were further evaluated based on title and abstract. Mitochondrial dysfunction is the main cause of RGC loss in glaucoma. Mitochondrial dysregulation leads to decrease ATP production, and impaired mitophagy contributes to oxidative stress and neuronal damage. Dysfunctional NAD^+ metabolism further impairs mitochondrial function and sirtuin activity, reducing RGC resistance to glaucomatous stress. Together, these bioenergetic deficits represent critical therapeutic targets. The key molecular pathways in bioenergetic dysfunction include AMPK– SIRT1– PGC-1α, PI3K/ Akt/ mTOR, autophagy and mitophagy and NAD^+ salvage pathway. AMPK and SIRT1 directly affect PGC-1α activity via phosphorylation and deacetylation enhances mitochondrial biogenesis and antioxidant defense—mechanisms often suppressed in glaucoma. PI3K/ Akt/ mTOR axis supports mitochondrial stability and enhances energy and cell survival, which are dysregulated in glaucomatous stress. PTEN- induced kinase 1 (PINK1) and Parkin RBR E3 ubiquitin-protein ligase (PARKIN) signaling play key roles in mitophagy and mitochondrial motility and size. PINK1 accumulates at the outer mitochondrial membrane (OMM) in response to a reduction in mitochondrial $\Delta\Psi m$ caused by damage/dysfunction. In turn, this recruits PARKIN from the cytosol to the OMM were its E3 activity promotes mitophagy, through ubiquitination of mitochondrial proteins, leading to mitochondrial degradation. Mitophagy and PINK1/ PARKIN signaling are disrupted in glaucoma. NAD+ is the main chain of various metabolic reactions that lead to ATP production, which is essential for RGC function. Various pathways influence the NAD+(H) redox state, affecting mitochondrial function and predisposing RGCs to degeneration. NAD^+ decrease impairs energy metabolism and neuroprotection.

Results

Metformin has optic nerve protection through activation of AMPK and increased autophagy. Quercetin reduces apoptosis by activating the PI3K/ Akt pathway and consequently reducing mitochondrial breakdown. Resveratrol also activates SIRT1 and promotes mitochondrial biogenesis and redox balance. Berberine, another AMPK modulator, supports mitochondrial dynamics and suppresses inflammation.

Phenolic compounds, particularly curcumin and Epigallocatechin gallate, exhibit potent antioxidant properties through activation of Nrf2/ HO-1 pathway and simultaneously inhibiting inflammatory mediators via NF-κB suppression. The flavonoid family which includes compounds from apigenin to scutellarin, shows remarkable diversity in their neuroprotective function – with luteolin modulates NAD+ salvage pathways through NAMPT regulation. Ginsenosides (Rb1, Rg3) maintain mitochondrial membrane potential and calcium homeostasis, while shikonin regulates metabolism and prevents apoptosis.

Conclusion

Although in vitro evidence shows remarkable effects, translational challenges still remain. Poor bioavailability- due to rapid metabolism, low absorption, or instability- severely reduces their in vivo effects. Furthermore, optimal dosing and long-term safety profiles in humans remain unclear. The mechanistic complexity of these compounds, combined with individual variability, complicates their therapeutic application.

Bioenergetic dysfunction is the main issue in glaucomatous neurodegeneration. Administration of some natural compounds and medication enhanced metabolic resilience, revealing a novel approach to neuroprotection in glaucoma. While initial results are encouraging, future efforts should focus on improving drug delivery systems, validating efficacy in clinical trials, and developing combination therapies. Such strategies may expand glaucoma treatment beyond IOP reduction and offer new hope for preserving vision.

Article Number: 123

Multidrug-Resistant (MDR) Bacterial Pneumonias and Tigecycline: Evaluating Its Therapeutic Role Based on Recent Evidence

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Introduction
Multidrug-resistant (MDR) bacterial pneumonias are a global health problem, with limited treatment options. Tigecycline, possesses broad-spectrum activity against Gram-positive and Gram-negative MDR pathogens, including MRSA, ESBL-producing Enterobacteriaceae and Acinetobacter baumannii. Its role in the treatment of MDR pneumonia is controversial due to pharmacokinetic limitations and conflicting efficacy reports.
Materials & Methods
We searched PubMed/MEDLINE, Web of Science, and Scopus published between 2020 and 2025. We used keywords such as "tigecycline", "MDR", "multidrug resistance", "pneumonia", "HAP". "VAP". and "carbapenem-resistant" We focused on clinical trials, randomized controlled trials (RCTs), and review articles that explore utilizing tigecycline in treating multi-drug resistant pneumonias.
Results
Tigecycline is active in vitro against MDR pathogens but has poor lung penetration at standard doses (100 mg LD, 50 mg q12h) and may lead to therapeutic failure. Increased response is achieved with high doses (e.g., 200 mg LD, 100 mg q12h) in CRAB/KP pneumonias, particularly with combination with colistin. But FDA alerts suggest increased mortality in serious infections (e.g., bacteremia) and adverse effects (e.g., pancreatitis, hypoglycemia, coagulopathy). Off-label utilization of HAP/VAP is prevalent but contentious due to Pseudomonas inactivity and non-uniform clinical success.
Conclusion
Tigecycline remains a salvage drug for MDR pneumonias when other choices fail, most prominently in CRAB/CRKP infections. Optimal dosing, combination regimens, and carefull patient selection are important. High-dose protocol standardization regimens validation in future studies are warranted.
Article Number: 191

Survey on Factors Influencing Adherence Among the Patients with Attention-Deficit/Hyperactivity Disorder (ADHD): Psychotherapists' Perspective

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Introduction

Attention deficit hyperactivity disorder (ADHD) is one of the most common child and adolescent psychiatric disorders that can significantly impact an individual's life in terms of education, social, and psychological. ADHD consists of symptoms such as inattention, hyperactivity, and impulsivity, which can cause severe issues in an individual's daily life. If this condition is not dealt with in due time, it may lead to psychosocial problems in adult life such as anxiety, depression, and job and social relation problems.

Materials & Methods

A database search strategy was designed to identify articles related to psychological, cognitive, social, and cultural factors influencing treatment adherence in patients with attention deficit/hyperactivity disorder (ADHD) from the perspective of psychotherapists. The search was conducted in reputable databases, such as PubMed, MEDLINE, EMBASE, and Google Scholar. Keywords: ADHD, Medication adherence, psychotherapists' perspective, psychological factors, cognitive factors, family involvement, and social support. The search was combined using Boolean operators (AND, OR), and articles published in English from 2016 onwards were selected. In addition to searching for scientific articles, semi-structured interviews with psychotherapists (expert psychologists and psychiatrists) were used as the primary data collection tool. In addition, demographic questionnaires completed by psychotherapists were used to collect additional information about their demographic and professional characteristics. This strategy was designed to obtain up-to-date and relevant data regarding the impact of various factors on treatment adherence.

Results

This study investigated the factors influencing adherence to treatment in patients with attention deficit/hyperactivity disorder (ADHD) from the perspective of psychotherapists. Thirty psychotherapists specializing in ADHD treatment were recruited via semi-structured interviews. The results of this study were analyzed in several different sections, including demographic characteristics, work experience, type of treatment, and barriers and facilitators of adherence to treatment.

Conclusion

Short-term interventions o Parental and patient education: Providing accurate information about the nature of the disorder and treatment, which can reduce patient and family resistance. Effective therapist-family engagement: Establishing warm connections with families and offering practical solutions to existing problems. Treatment simplification: Reducing the complexity of treatment by choosing lower doses and simpler medications.

Article Number: 151

Causality, Severity, and Preventability of Adverse Drug Reactions in the Intensive Care Unit: A Systematic Review on Features and Effects of Assessment Tools

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Introduction

Adverse drug reactions (ADRs) are a major concern in the healthcare system, contributing significantly to patient morbidity, mortality, and increased costs, especially among critically ill patients in the intensive care unit (ICU). These adverse events can have serious consequences, underscoring the need for comprehensive monitoring and assessment strategies to identify, diagnose, and mitigate their occurrence. Adverse drug reactions are estimated to be responsible for up to 7% of hospital admissions and can prolong hospital stays by an average of 8 days. The risk of ADRs is particularly high in the ICUs, where patients often receive multiple medications and have complex medical conditions that increase their vulnerability. Effective ADR assessment in critical care is essential for accurate causality determination, severity prioritization, and evaluating preventability to guide interventions and patient care quality improvement.

Materials & Methods

We performed a systematic search on PubMed, Web of Science, Scopus, and Google Scholar datasets up to 21 December 2024 on articles utilizing a structured assessment framework for evaluating potential ADRs in ICUs with a language restriction of English only. The quality of studies was evaluated with the Risk of Bias (ROB) Tool. This systematic review is reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Guidelines.

Results

In this study, 28 articles out of 3422 potentially relevant articles were examined. The publication year of most articles, except for two of them, was after 2000. The majority of the studies were conducted in Western countries. The sample size in the articles under review ranged from 51 to 1101 patients. In the evaluation of causality, the Naranjo algorithm checklists were found to be more effective. Additionally, in assessing severity, the most used method was the National Coordination Council for Medication Error Reporting and Prevention (NCC MERP). For preventability, there were not many checklists available, and many articles were assessed based on patient information without focusing on a specific method. However, among the articles that used a specific method, the Schumock and Thornton methods were more commonly repeated rticles that used a specific method.

Conclusion

This systematic review provides a comprehensive examination of ADR assessment frameworks in the ICU. A key finding is the superior performance and widespread adoption of the Naranjo and Jones algorithms for causality assessment. Regarding severity assessment, our review identified the NCC MERP as the predominant and most effective tool. This checklist provides a clear categorization system for classifying the severity of adverse events, from no harm to patient death. In contrast, the evaluation of ADR preventability lacked a similarly robust and standardized methodology. Many studies relied on subjective assessments based on patients' data, without dedicated preventability checklists. The Schumock and Thornton method was the most commonly reported specific tool, highlighting the need for further development and validation of preventability assessment tools in the ADRs related to ICUs. However, it is still needed to conduct more studies in this area.

Article Number: 50

Efficacy and Safety of SGLT-2 Inhibitors in Acute Myocardial Infarction: A Systematic Review and Meta-Analysis

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Introduction

Acute coronary syndrome (ACS) is a major cause of death. SGLT-2 inhibitors benefit individuals with type 2 diabetes and heart failure (HF). Guidelines recommend SGLT-2 inhibitors for some HF stages but lack specific guidance for stage B HF post-acute MI. There is limited evidence on SGLT-2 inhibitor use in acute MI. This study is the first meta-analysis to evaluate SGLT-2 inhibitor efficacy and safety in acute MI regardless of diabetes status, aiming to fill this evidence gap.

Materials & Methods

The odds ratio (OR) was calculated with 95% confidence intervals (95% CI) using both random and fixed-effects models. The calculation of the OR involved using the number of events in each group, and these were then calculated by the inverse variance method. To assess the effect of SGLT-2 inhibitors on continuous variables, the standard means difference (SMD) was calculated by Mantel–Haenszel with a 95% CI. All reported results were adjusted to means and standard deviations (SD) for each study unless unadjustable variables were reported. Statistical heterogeneity between studies was assessed using the I^2 statistic. The interpretation of the I^2 index is as follows: 0% to 25% suggests not important heterogeneity, 25% to 50% indicates moderate heterogeneity, 50% to 75% suggests substantial heterogeneity, and 75% to 100% indicates considerable heterogeneity. Due to the limited number of studies, a funnel plot could not be used to examine study effects in the meta-analysis. All the results in the manuscript were reported based on random effects. A P value < 0.05 was considered statistically significant. Finally, all effect sizes and CI (95%), Tau-squared (Tau^2), Chi-squared (Chi^2), degree of freedom (df), and P value have been represented in the **forest plot**.

Results

The search yielded 2465 references, with 9 studies (5 RCTs, 4 observational) including 15,595 participants in the final analysis. Most participants were male, with mean ages ranging from 55.2 to 67.22 years. Empagliflozin and dapagliflozin were the most frequently investigated SGLT-2 inhibitors. The analysis found that SGLT-2 inhibitors significantly improved LVEF and reduced HHF in RCTs. Observational studies favoured SGLT-2 inhibitors for reducing all-cause mortality, but no significant difference was found for all-cause mortality in RCTs or for CV mortality overall. SGLT-2 inhibitors did not significantly reduce NT-proBNP levels. Safety data reported some adverse events like UTI and genital fungal infections. Eleven ongoing trials are also mentioned.

Conclusion

The results of this study showed that SGLT-2 inhibitors significantly reduced all-cause mortality, among individuals with acute MI, based on the meta-analysis of the observational studies. Results of RCTs supported the LVEF improvement benefit of SGLT-2 inhibitors and the reduction rate of HHF in the acute MI population. Further large RCTs are still needed to provide robust evidence for suggesting SGLT-2 inhibitors in acute MI setting.

Article Number: 51

Melatonin Aids in Treating Mood and Sleep Problems Resulting from Hormonal Therapy in Breast Cancer Patients: A Randomized, Double-Blinded, Placebo Controlled Trial

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Introduction
Hormone therapy is commonly used for breast cancer treatment but can cause mood disorders and sleep disturbances, negatively affecting patients' well-being. This trial aimed to evaluate the effects of melatonin on sleep problems and mood changes in breast cancer patients undergoing hormone therapy.
Materials & Methods
Conducted at Omid Hospital in Isfahan, Iran, the study employed a randomized, double-blinded, placebo-controlled design. Participants were assessed using the Hospital Anxiety and Depression Scale (HADS) and assigned to receive either 6 mg melatonin or placebo daily for 4 weeks. Sleep quality, depression levels, and mood states were measured using the Pittsburgh Sleep Quality Index (PSQI), the Center for Epidemiological Studies-Depression Scale (CES-D), and the Profile of Mood States (POMS) questionnaires at the beginning and end of the 4-week period.
Results
Sixty participants (34 in the melatonin group, 26 in the placebo group) completed the study. Melatonin administration significantly improved sleep quality, latency, duration, and reduced sleep-promoting medication use according to the PSQI scores. However, there were no significant improvements in depression severity or mood disorders, as assessed by the CES-D and POMS questionnaires, in either group following the 4-week melatonin supplementation period.
Conclusion
Melatonin supplementation effectively alleviated sleep disturbances caused by hormone therapy in breast cancer patients. However, the study did not find substantial evidence supporting the use of melatonin for improving mood disorders or depression in this specific context.
Article Number: 89

Exploring the Efficacy of Melatonin in Alleviating Menopausal Symptoms in Breast Cancer Survivors: A Randomized, Double-Blind, Placebo-Controlled Study

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Introduction

Patients with hormone-positive breast cancer (BC) who are receiving anti-hormone medications suffer from complications including hot flashes, decreased libido, and mood changes due to artificial menopause. Considering the positive effects of melatonin administration on ameliorating hot flashes and depression in postmenopausal women, we aimed to examine the effects of melatonin supplementation on menopausal-related complications in BC patients who were receiving anti-hormone medications.

Materials & Methods

This study was a randomized, placebo-controlled clinical trial conducted in haematology-oncology clinic of Omid hospital, Isfahan, Iran during 1 year patients' recruitment. Adult patients with BC who were being treated with selective estrogen receptor modulators family drugs or aromatase inhibitors while they were complaining of menopausal complications were included. Melatonin (3 mg) or identical placebo were administrated twice a day orally. Several questionnaires including the Menopause Rating Scale (MRS), the Menopause-specific Quality of Life-Intervention (MENQOL) and the Female Sexual Function Index (FSFI) were applied for the evaluation of comparison items.

Results

Sixty patients were fulfilled to complete the 4-week treatment. There were no significant differences in patients' baseline clinical characteristics. Supplementation by melatonin was associated with a significant decrease in frequency and severity of hot flashes, and the mean score of menopausal symptoms. The quality of life and sexual function were enhanced by 4-week melatonin treatment.

Conclusion

Considering the effect of melatonin on menopausal complications and quality of life during menopause and sexual function scores in people undergoing BC anti-hormone treatment, melatonin can be considered a potential candidate to include in the treatment regimen of BC patients.

Article Number: 87

Implementation the Electronic Online Stewardship System in Nikan Sepid Hospital: Issues and Challenges

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Introduction

Antibiotic stewardship in healthcare settings is essential for preventing antimicrobial resistance and optimizing patient care. The implementation of electronic systems can serve as an innovative solution to effectively support rational antibiotic use programs. This study aimed to design, develop, and evaluate the effectiveness of a localized electronic system for monitoring and managing antibiotic prescriptions at Nikan Sepid Hospital.

Materials & Methods

An electronic platform was developed through collaboration between the clinical pharmacy team and software engineering experts. The system is capable of recording, evaluating, and generating alerts for off-guideline prescriptions. It is integrated with standard clinical guidelines and allows for the documentation of pharmaceutical interventions, physician response tracking, and statistical reporting. Also, all laboratory tests included in this electronic system. The system was piloted in several hospital units, and feedback from the clinical team was collected.

Results

The implemented system led to increased transparency in prescribing processes, reduced medication errors, and improved follow-up on pharmacist interventions. Compliance with antibiotic prescribing guidelines improved, and physician acceptance of interventions increased. The clinical team reported high satisfaction with the usability and performance of the system. At the end of the study (during September 2024 until May 2025), the results showed 12 patients received linezolid, 43 patients received teicoplanin, 22 patients received tigecycline, 17 patients received ceftazidime-avibactam, 14 patients received caspofungin, 50 patients received colistin, 265 patients received Meropenem and 58 patients received vancomycin

Conclusion

Designing and implementing a localized electronic system to support antibiotic stewardship programs can be an effective tool for enhancing treatment processes and clinical decision-making.

Article Number: 238

Evaluation of the Effect of Empagliflozin on Prevention of Atrial Fibrillation after Coronary Artery Bypass Grafting: A Double-Blind, Randomized, Placebo-Controlled Trial

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Introduction

This study aimed to evaluate the effect of empagliflozin in preventing atrial fibrillation after coronary artery bypass grafting (CABG).

Materials & Methods

Eighty-two patients who fulfilled the inclusion criteria were allocated to the empagliflozin group (n=43) or placebo group (n=39). In two groups, patients received empagliflozin or placebo tablets three days before surgery and on the first three post-operative days (for six days) in addition to the standard regimen during hospitalization. During the first three days after surgery, types of arrhythmias after cardiac surgery, including supraventricular arrhythmias, especially post-operative atrial fibrillation (POAF), ventricular arrhythmias, and heart blocks, were assessed by electrocardiogram monitoring. C-reactive protein (CRP) levels were evaluated pre-operatively and post-operatively on the third day.

Results

The incidence of POAF in the treatment group was lower compared to the control group; however, this reduction was statistically non-significant (p=0.09). The frequency of ventricular tachycardia was reduced significantly in the treatment group versus patients in the control (p=0.02). Also, a significant reduction in the frequency of premature ventricular contractions (PVCs) was seen in the treatment group in comparison with the control group (p=0.001). After the intervention, CRP levels were significantly less in the empagliflozin group compared to the control group in the third postoperative day (p=0.04).

Conclusion

The prophylactic use of empagliflozin effectively reduced the incidence of ventricular arrhythmia in patients undergoing CABG surgery.

Article Number: 2

Accessing the Efficacy and Safety of Hypericum Perforatum, A Clinical Pharmacy Approach to Herbal Medicine

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Introduction
Hypericum perforatum also known as St John's wort (SJW) is a flowering plant in Hypericaceae family. It widely used in traditional Chinese medicine as wound healing, stomach ulcers, migraine and particularly to treat mild to moderate depression. As well as its traditional applications, pharmacological present studies have evaluated notable therapeutic potential of H. perforatum and its bioactive components (e.g. hypericin, hyperforin) such as neuroprotective, anti-inflammatory properties, etc. Having desirable efficacy and tolerable side effects compared to conventional antidepressants are the main reasons to SJW derived products self-treatment raised. SJW and its derived products market report represents significant growth in consumption as supplement or herbal medicine all around the world today. Among all within this review, we aimed to emphasize the most crucial drug interactions of this plant, which have received limited attention so far.
Materials & Methods
The search for published articles has been conducted using various databases such as PubMed, Scopus, and google scholar, only those articles that met our criteria were finally included in our study.
Results
Although SJW has shown satisfying effect as a natural antidepressant, a number of clinically significant interactions with prescribed medications have been reported. This resulted in H. perforatum drug metabolizing enzymes, transporters induction property, and their relative contribution to drugs clearance. Particularly interactions accrued when it consumed with prescription drugs, which mainly metabolized by cytochrome P450 family. For the most parts, interactions appeared with clinical symptoms such as unstable INR values, transplant graft rejection, unplanned pregnancies, drug resistance and above all serotonin syndrome which is characterized by flushing, fever, rhabdomyolysis and coma as a result to SSRIs co-administration. But also it is more than that the higher risk of child malformation might be a result to utilization of H. perforatum during first trimester of pregnancies.
Conclusion
Along with the increasing understanding of how H. perforatum interactions may affect the treatment strategies it can be easily concluded that with the widespread utilization of SJW as a liable herbal medicine to treat mild to moderate depression the risk of herb-drug interactions is arising clinical discuss. Therefore, these interactions must be taken into consideration for every patient who taking medicines appropriate to risk factors and metabolizing condition.

Article Number: 153

Cyclosporine Blood Levels in Allogeneic Hematopoietic Stem Cell Transplant Recipients: A Five-Year Cohort Study on Efficacy and Side Effects

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Introduction

Cyclosporine is a key immunosuppressant used to prevent acute graft-versus-host disease (aGvHD) in patients undergoing allogeneic hematopoietic stem cell transplantation (allo-HSCT). Given its narrow therapeutic window and potential for serious adverse effects, maintaining therapeutic blood levels is critical. This study evaluated cyclosporine blood levels and their association with efficacy and safety outcomes in allo-HSCT recipients.

Materials & Methods

Data from allo-HSCT patients receiving cyclosporine were evaluated in this 5-year retrospective cohort study. Blood levels were assessed during the first four weeks post-transplant and from week four until hospital discharge. Patients were categorized as having therapeutic, subtherapeutic, or toxic levels. Associations between cyclosporine levels, clinical efficacy, and adverse events were analyzed.

Results

A total of 400 patients (mean age: 38.5 years; 58.5% male) were evaluated. During the first four weeks post-transplant, 42.8% had non-therapeutic cyclosporine levels (23.8% subtherapeutic, 19% toxic). Among the 63 patients monitored beyond four weeks, 60.3% had non-therapeutic levels (39.7% subtherapeutic, 20.6% toxic). The incidence of aGvHD was significantly higher in patients with subtherapeutic levels (35.9%) compared to those with toxic (13.1%) or therapeutic levels (9.9%) ($P<0.001$). Although a trend toward more severe aGvHD was observed in patients with non-therapeutic levels, it did not reach statistical significance. Elevated cyclosporine levels were significantly associated with hyperkalemia ($P<0.001$) and hypomagnesemia ($P=0.013$), with no significant differences in hyperglycemia or dyslipidemia.

Conclusion

Non-therapeutic cyclosporine levels were linked to increased aGvHD incidence and adverse effects such as nephrotoxicity, hepatotoxicity, electrolyte imbalances, and hypertension. These findings underscore the need for vigilant therapeutic drug monitoring to improve outcomes and reduce complications in allo-HSCT patients.

Article Number: 77

Assessment of Immunosuppressant Drug Interactions in Allogeneic Hematopoietic Stem Cell Transplantation Patients: A Retrospective Cohort Study

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Introduction

Allogeneic hematopoietic stem cell transplantation (allo-HSCT) recipients are frequently exposed to complex polypharmacy regimens, including immunosuppressants, chemotherapeutic agents, and antimicrobials, which significantly increase the risk of potential drug–drug interactions (pDDIs). Given the narrow therapeutic index of immunosuppressive agents, such interactions may lead to subtherapeutic or toxic drug levels, thereby heightening the risk of acute graft-versus-host disease (GVHD) or severe infections. This study aimed to assess the clinical impact and prevalence of pDDIs involving immunosuppressants in allo-HSCT recipients.

Materials & Methods

This retrospective cohort study analyzed data from a 2-year period on patients who underwent allo-HSCT during their hospital stay. Interactions between immunosuppressive agents and other medications were evaluated using the Drugs.com and Lexi-Interact databases. Demographic data, transplant characteristics, complete medication profiles (including chemotherapy and supportive therapies), laboratory parameters, and blood concentrations of immunosuppressive agents were extracted from medical records. pDDIs were identified, categorized, and assessed for their clinical significance.

Results

A total of 169 patients were evaluated (mean age: 38 years; 46.7% female). A total of 4,984 pDDIs were identified, representing 313 distinct interaction types. The majority of pDDIs were classified as having major severity (52.4%), primarily mediated through pharmacokinetic mechanisms (63.4%), with an unspecified onset (79.1%) and supported by fair evidence (67.3%). Among the identified immunosuppressive interactions, 73.5% were deemed clinically significant. The most common drugs involved in interactions with immunosuppressants were voriconazole, fluconazole, and dexamethasone, respectively.

Conclusion

Evaluating drug–drug interactions involving immunosuppressants is vital to improving safety and outcomes in HSCT recipients. Identifying clinically significant interactions can guide safer prescribing and targeted prevention in high-risk patients.

Article Number: 132

Evaluation of Drug-Related Problems (DRPs) Patterns in Nikan Sepid Hospital: An Online Pharmacist-Based Reporting Monitoring System

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Introduction

Drug-related problems (DRPs) are one of the most common safety threats in healthcare centers. The regular identification, documentation and reporting of DRPs play a crucial role in preventing the recurrence and improving the quality of pharmaceutical care services. This study aimed to identify, classify, and analyze different types of DRPs in order to recognize common error patterns and contributing factors in Nikan Sepid Hospital.

Materials & Methods

This descriptive cross-sectional study was conducted in Nikan Sepid Hospital during the years 2024–2025. A structured questionnaire was developed based on the European DRPs classification system and implemented as an online Google Form. Resident pharmacists in each ward were responsible for identifying DRPs and accurately reporting them in the online form. The data was collected by the above mentioned questionnaire. This questionnaire had some aspects including patient demographics information, types of medication errors, and corrective actions taken by pharmacists.

Results

Over a one-year period, 1911 DRPs were reported. 75.6% of DRPs occurred in medical wards and the rest of them occurred in the intensive care units. Cardiovascular diseases were present in 36.6% of the patients. Regarding the origin of the errors, 57.2% were related to physicians and 44.2% to nursing staff. The most frequent error types included prescribing a dose over the allowed daily dose (28.2%), selection of the wrong dosage form (12.5%), and drug selection leading to a drug-drug interaction (10%). Corrective actions by pharmacists included education and counseling (30%), dosage frequency adjustment (19.7%), and direct communication with the prescribing physician (15.8%).

Conclusion

The implementation of an online pharmacist-based DRPs reporting system enabled systematic identification of medication error patterns and facilitated effective interventions. The findings underscore the importance of continuous monitoring and inter professional collaboration in reducing preventable DRPs and enhancing patient safety.

Article Number: 235

Comparing the Effectiveness and Safety of Two Protocols with Different Levels of Albumin in Plasma Exchange of Patients with Neurological Inflammatory Disorders Requiring Plasmapheresis; A Randomized Blinded, Non-Inferiority Controlled Trial

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Introduction

This study aims to compare the efficacy and safety of two plasma exchange protocols with differing albumin levels in patients with neurological inflammatory disorders requiring plasmapheresis. A total of 60 patients will be included.

Materials & Methods

Inclusion and Exclusion Criteria: The study includes adults aged 18–65 years with neurological inflammatory syndromes who are candidates for plasma exchange, have a serum albumin level above 3 g/dL, and have provided written consent. Patients will be excluded if they are pregnant, lactating, or have heart, liver, or kidney failure, cirrhosis, cachexia, or malnutrition (BMI < 17.5). Additionally, individuals with unstable hemodynamic conditions such as septic shock, acute respiratory failure, pulmonary embolism, hypotension (systolic BP < 90 mmHg), or thrombocytopenia (PLT < 100,000) will be excluded. Intervention and Control Groups: In Intervention group, For every 1500 mL of plasma exchange, patients will receive two vials of 20% albumin and 1400 mL of normal saline during each PLEX session. In Control group, For every 1500 mL of plasma exchange, patients will receive four vials of 20% albumin and 1300 mL of normal saline during each PLEX session. Primary Outcomes: The study will evaluate differences in Edema Index and colloid osmotic pressure between the two groups, along with variations in the occurrence of hemodynamic disorders and plasma albumin levels.

Results

This protocol is currently in progress, and the results will be announced in the future.

Conclusion

This protocol is currently in progress, and the results will be announced in the future.

Article Number: 219

Case Report: Complete Heart Block in a 58-Year-Old Woman with Multiple Myeloma Treated with Carfilzomib–Implications for Risk Stratification in High-Risk Populations

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Introduction

Carfilzomib, a second-generation proteasome inhibitor, is a highly effective treatment for relapsed/ refractory multiple myeloma (MM). While cardiovascular toxicities such as hypertension and heart failure are recognized adverse effects, complete heart block (CHB) is rarely reported. This case report describes the development of CHB in a high-risk patient following carfilzomib initiation, highlighting the potential for this underrecognized complication in vulnerable populations with pre-existing cardiovascular and renal conditions.

Materials & Methods

A 58-year-old Iranian woman with relapsed MM and significant comorbidities, including prior acute coronary syndrome, dyslipidemia, hypertension, type 2 diabetes, and end-stage renal disease on hemodialysis, commenced carfilzomib-based therapy. Within 48 hours of the first cycle, she developed bradycardia and syncope, with electrocardiography confirming CHB. Management involved carfilzomib discontinuation and temporary pacemaker insertion. Her subsequent course was complicated by sepsis, leading to her demise five days post-CHB diagnosis.

Results

Utilizing the Naranjo Scale, the association between carfilzomib and CHB in this patient yielded a score of 3, indicating a possible adverse drug reaction. While the temporal relationship was strong, the patient's multiple comorbidities and polypharmacy represented potential confounding factors.

Conclusion

This case suggests carfilzomib as a possible cause of CHB, particularly in MM patients with pre-existing cardiovascular and renal disease. It underscores the critical need for thorough cardiac risk assessment, vigilant monitoring during carfilzomib treatment, and careful consideration of cumulative toxicities in high-risk populations with multiple comorbidities. Further research is essential to refine risk stratification and optimize management strategies for cardiovascular complications associated with proteasome inhibitors in this vulnerable patient group.

Article Number: 182

Evaluation of Colchicine Effectiveness During Sepsis

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Introduction

Sepsis is an unusual systemic inflammatory response to infection, leading to organ failure such as lung and liver injury. Among sepsis complications, Acute lung injury (ALI) remains prevalent and a major cause of death in critically ill patients. However, new treatments for sepsis-induced ALI have shown little progress in recent decades. The liver also plays a vital role in sepsis pathophysiology through multiple mechanisms. Colchicine is an anti-inflammatory, anti-fibrotic, and antimitotic drug that disrupts microtubule assembly-crucial for cell shape, signaling, trafficking, division, and migration. Recent trials support colchicine's role in cardiovascular disease prevention and pericarditis treatment, suggesting the need for further research on its potential in sepsis. This review aims to explore colchicine effects in sepsis through preclinical and clinical studies.

Materials & Methods

literature search was done using pubmed and google scholar. Search words included ((“Colchicine”[Mesh]) AND (“Sepsis”[Mesh])) in MeSH pubmed. Search words in google scholar included (sepsis) AND (colchicine). 5 articles were selected based on their abstract for this review. Google scholar search resulted in 1 more related article. Generally, 6 articles, including preclinical and clinical studies were reviewed. All papers were included without language limitation from1990 until March 2025.

Results

An animal study assessed colchicine’s effect on secondary ALI, evaluating lung damage score, neutrophil counts, histopathology, and TNF-α levels. Another study investigated STAT3, TNF-α, and IL-1β pathways. A separate research studied low-dose colchicine’s effect on end organ failure, assessing liver enzymes and cytokines. Bioinformatics showed CXCL12/CXCR4 signaling involvement in neutrophil accumulation in sepsis-induced ALI. Cuschieri et al. studied colchicine’s role in microtubule polymerization, measuring ERK½, JNK, NF-κB, ICAM-1, and IL-8 in endothelial cells. Lastly, a clinical trial examined the DCP (dexamethasone, colchicine, pentoxifylline) regimen’s inhibitory effect on TNF-α in sepsis patients.

Conclusion

ARDS and ALI involve inflammation in sepsis. Colchicine, a microtubule depolymerizer, reduces lung damage in rat models by lowering neutrophil counts and limiting alveolar wall thickening. Cuschieri et al. showed colchicine suppressed LPS-induced ERK½ and JNK activity, reduced IL-8, and neutrophil adherence, which may protect against ARDS. Colchicine may also modulate STAT3 and inhibit NLRP3, reducing TNF-α and IL-1β expression. CXCL12/CXCR4 signaling, involved in neutrophil retention, may represent a key target for colchicine. Kenig et al. showed colchicine improved liver function and survival in septic mice. A clinical trial found the DCP regimen reduced TNF-α in 48h and was well tolerated. Altogether, colchicine shows promise in sepsis, but more clinical trials are needed to confirm its safety and efficacy.

Article Number: 129

Pharmacist Interventions and Medication Adherence in Pediatric and Adult Epilepsy Patients: A Review of Age-Related Differences

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Introduction
Epilepsy is a chronic neurological condition that needs long-term treatment with medication. However, medication adherence can vary widely between children and adults. This ongoing issue of non-adherence remains a significant challenge to achieving effective seizure control. The purpose of this review is to examine the age-specific characteristics that affect medication adherence in patients with epilepsy, both adults and children and to assess how well pharmacist-led treatments work to improve adherence outcomes in both groups. The purpose of this review is to examine the age-specific characteristics that affect medication adherence in patients with epilepsy, both adults and children and to assess how well pharmacist-led treatments work to improve adherence outcomes in both groups.
Materials & Methods
A narrative literature review was conducted using peer-reviewed articles published from 2018 onward. Databases searched included ScienceDirect and Google Scholar with keywords such as "epilepsy", "adherence", "pediatric", "adult", and "pharmacist intervention". Five studies were selected based on their relevance to age-related adherence and the role of pharmacists.
Results
While adult patients are more affected by psychological, social, and lifestyle variables, children with epilepsy have difficulty adhering to treatment plans due to developmental limitations, emotional reactions, and dependence on caregivers. Pharmacist interventions like personal education, one-on-one counseling, tools to help with medication adherence, and working closely with other healthcare professionals can make a difference. When pharmacists are actively involved, especially during care transitions, they help improve the quality and consistency of patient care in a big way.
Conclusion
Managing epilepsy with maximum effectiveness requires understanding the distinct adherence barriers in various age groups. For pediatric and adult patients with epilepsy, pharmacist-based interventions customized to age-specific needs improve medication adherence, treatment outcomes, and quality of life.
Article Number: 169

Evaluation of Potentially Inappropriate Medication Use Among Hospitalized Older Adults at Discharge: A Cross-Sectional Analysis Utilizing the 2023 AGS Beers Criteria at West Nikan Hospital, Tehran

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Introduction
Polypharmacy and the prescription of potentially inappropriate medications (PIMs) are major concerns in clinical pharmacy practice, particularly among geriatric populations. These issues contribute substantially to adverse drug events, hospitalizations, morbidity, and increased healthcare costs. Age-related physiological changes, including impaired renal and hepatic function and altered pharmacokinetics and pharmacodynamics, exacerbate these risks. Globally, studies report varying PIM prevalence rates, from 21.3% in the United States to 73% in Slovakia and 81.43% in Saudi Arabia. Such variability highlights the critical need for localized data. The American Geriatrics Society (AGS) Beers Criteria, most recently updated in 2023, provide a validated framework for identifying PIMs and improving medication safety in older adults. However, research focusing on hospital discharge practices in Iran remains limited.

Materials & Methods
This study aimed to assess the prevalence of PIM prescriptions at discharge among patients aged 65 and older at West Nikan Hospital, Tehran, using the 2023 AGS Beers Criteria. The study also sought to identify the most frequently prescribed PIMs and outline their clinical implications.

Results
A total of 191 patient records were analyzed. Of these, 82.7% had at least one PIM at discharge; 62.3% had two or more, and 27.7% had three or more PIMs. The most commonly prescribed PIMs included proton pump inhibitors (pantoprazole, n=113), aspirin (n=61), ibuprofen (n=29), pregabalin (n=18), and levofloxacin (n=13). Risks identified for these medications include Clostridium difficile infection and fractures (pantoprazole), gastrointestinal bleeding (aspirin), renal impairment and hypertension (ibuprofen), cognitive impairment and fall risk (pregabalin), and tendon rupture and CNS adverse effects (levofloxacin).

Conclusion
The high prevalence of PIMs at discharge emphasizes the urgent need for enhanced medication review processes and stronger adherence to geriatric prescribing guidelines such as the AGS Beers Criteria. To improve patient safety, recommendations include targeted education for prescribers, routine discharge medication audits, integration of clinical pharmacist-led interventions, and the adoption of geriatric-specific clinical decision-support tools. Collaborative multidisciplinary approaches are essential for optimizing medication safety and outcomes in geriatric care.

Article Number: 194

Efficacy of 2-Mercaptoethane Sulfonate Sodium (MESNA) in the Prevention of Pancreatitis After Endoscopic Retrograde Cholangiopancreatography: A Randomized Open Label Trial

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Introduction

Oxidative stress has been considered a factor in the development of post-endoscopic retrograde cholangiopancreatography pancreatitis (PEP). The present clinical trial evaluated whether adding intravenous mesna to rectal indomethacin could prevent or alleviate PEP.

Materials & Methods

An open-labeled clinical trial was done on 698 participants undergoing endoscopic retrograde cholangiopancreatography (ERCP). Eligible patients received 100 mg indomethacin suppository 30 min before undergoing ERCP. Randomly, the participants received 400 mg intravenous mesna or nothing 30 min before doing the procedure. The PEP incidence and degree were measured in the patients as the main outcome.

Results

The total rate of PEP was equal to 13.7%. No significant difference was seen in the rate and severity of PEP between the mesna plus indomethacin and indomethacin alone arms (14% vs. 13.4%, respectively, p = 0.671). In high-risk patients, PEP rate and severity were lower in the mesna plus indomethacin group compared with indomethacin alone group and the statistical analysis showed that the difference was significant (41.7% vs. 51.8%, respectively, p = 0.033).

Conclusion

In high-risk patients undergoing ERCP, a combination of intravenous mesna plus rectal indomethacin may decrease the PEP rate and severity.

Article Number: 23

The Effect of Abatacept on Two Cases with LRBA Deficiency

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Introduction

LRBA and CTLA4 proteins play a key role in regulating T-cell activity. Mutations in the genes encoding these proteins can disrupt immune system regulation .Abatacept , a new biological drug, is a CTLA-4 fusion protein. In this study, we report two cases of LRBA deficiency.

Case Presentation

The first case is a 7-year-old girl with unrelated parents, diagnosed with a mutation in the LRBA gene. Her symptoms started at age 3, beginning with lymphadenopathy in her neck and inguinal region. At age 4, she developed hemolytic anemia that didn't respond to treatment. Later, she had lung involvement and also got fungal infections. At age 4.5, the treatment started with IVIG, Cotrimoxazole, Voriconazole, and Acyclovir. She then developed severe cough, and after receiving 6 doses of Rituximab, her symptoms improved. A year later, at the age of 6, the cough returned. She was given 3 doses of Abatacept, without appropriate response. Her symptoms improved again after receiving Rituximab. The second case involves another 7-year-old girl, born to second-degree consanguineous parents, diagnosed with compound heterozygous mutations in the LRBA gene. Her symptoms began with steroid-refractory hemolytic anemia at age 3, progressing to granulomatous lung involvement. Lab findings revealed hypogammaglobulinemia and slightly reduced B cell counts. Although corticosteroids and Rituximab were used, lung lesions persisted. She then received Abatacept for a year, with a favorable clinical outcome. Despite treatment with corticosteroids and Rituximab, the lung granulomas were not controlled, and she received Abatacept for one year, with good response.

conclusion

Abatacept can be helpful in management of some patients with LRBA deficiency

Article Number: 118

Pyrrolopyridine and Isoindole as Potential Anticonvulsant Agents: Design, Synthesis, and Pharmacological Evaluation

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Introduction
Phthalimide, as the rigid form of ameltolide, exhibits a phenytoin-like profile of drug-receptor interaction and is active in the MES model and inactive in the PTZ model as an anti-epileptic agent. In this research, based on the isosteric replacement, we reported the design, preparation, and antiepileptic activity of 13 new analogs of pyrrolopyridine and isoindole.
Materials & Methods
The designed compounds were prepared by condensing 3, 4-pyridine dicarboxylic anhydride, or 4-fluorophthalic anhydride with different aryl amines. MES and PTZ-induced seizure models were utilized to evaluate the antiepileptic effect of the prepared ligands.
Results
It was found that the prepared ligands have significantly affected both tonic and clonic seizures. In tonic seizures, the prepared compounds decreased mortality to a significant extent, and in clonic seizures, they significantly showed better frequency and latency. Compounds 9, 12, and 13 were the most potent ligands than phenytoin.
Conclusion
It is concluded that the best distance between two aryl parts is two bonds, and the substitution of the nitro group at the meta position of the phenyl ring is better than the para position. Our research group has investigated this concept for designing newer compounds with better anticonvulsant activity.
Article Number: 211

Antimicrobial Lock Solutions for the Treatment of Catheter-Related Infections in Cancer Patients: A Systematic Review

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Introduction

Catheter-related infections (CRIs) are common and serious complications in immunosuppressed cancer patients with indwelling central venous catheters, leading to substantial morbidity and potential mortality. Removing an infected catheter is often challenging in this population (due to thrombocytopenia, limited venous access, and other risks), making antimicrobial lock therapy (ALT) an appealing salvage strategy. ALT involves instilling a concentrated antimicrobial lock solution (ALS) into the catheter lumen to eradicate biofilm pathogens while preserving the line. Aim: To evaluate the effectiveness and safety of antimicrobial lock solutions in treating CRIs in cancer patients.

Materials & Methods

We systematically searched PubMed, Cochrane Library, Embase, Scopus, and Web of Science through January 28, 2025. Eligible studies were randomized trials or observational cohorts of ALT in adult oncology or hematology patients with documented CRIs. Any ALS was considered (e.g., antibiotic locks like vancomycin or gentamicin and non-antibiotic locks like ethanol or taurolidine). Key outcomes were infection resolution with catheter retention (treatment success), mortality, systemic antibiotic duration, adverse events, and catheter removal rate.

Results

A total of 1,742 records were identified through database searches. After removing 588 duplicates, 1154 titles and abstracts were screened, leading to 118 full-text articles assessed for eligibility. Ultimately, 29 studies—comprising 5 trials and 24 observational studies—were included in the review. Reported treatment success rates varied by lock solution. Ethanol lock therapy achieved CRI resolution in approximately 50–70% of cases, similar to the ~45–60% success with antibiotic locks (e.g., vancomycin). A novel combination lock solution (minocycline–EDTA–ethanol, Mino-Lok) demonstrated higher catheter salvage success (~57%) than standard therapy (~38%) in a Phase 3 trial. Taurolidine–citrate locks were associated with high cure rates, often >80% in small series. Overall, infection-related mortality was low (generally <5%), and ALT frequently preserved the catheter, with only rare mild adverse events reported.

Conclusion

Evidence from 29 studies indicates that ALS-particularly ethanol, organism-tailored antibiotic locks, taurolidine, and the novel Mino Lok solution-can safely salvage 50–90% of infected central lines in cancer patients without increasing mortality or serious toxicity. Incorporating ALT into CRI management algorithms may preserve critical venous access and avoid procedure-related complications, although high-quality head-to-head trials are still needed to define the optimal lock agent for specific pathogens and patient subgroups.

Article Number: 137

Business Intelligence-Enhanced Pharmacovigilance: Signal Detection And Monitoring Of Platinum-Based Chemotherapy Adverse Drug Reactions

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Introduction

Platinum-based chemotherapy drugs, including cisplatin, carboplatin, and oxaliplatin, are pivotal in treating various cancers but are associated with significant adverse drug reactions (ADRs). Effective pharmacovigilance is crucial for managing these side effects and optimizing patient outcomes.

Materials & Methods

retrospective, cross-sectional study was conducted using a pharmacovigilance database spanning 2022–2025 to evaluate ADRs associated with cisplatin, carboplatin, and oxaliplatin. Data extraction included patient demographics, and standardized ADR terminology (MedDRA version 26.1). Signal detection methodologies—Proportional Reporting Ratio (PRR) and Reporting Odds Ratio (ROR)—were applied to identify statistically significant ADRs (criteria: PRR $\geq$ 2 and ROR $\geq$ 2). A Business Intelligence (BI) dashboard was developed using Power BI to visualize ADR and real-time monitoring capabilities. Automated reporting features provided summaries of key metrics to facilitate decision-making by medical safety teams and regulatory agencies.

Results

The analysis identified 723 ADR reports linked to platinum-based drugs: cisplatin (n = 75), carboplatin (n = 278), and oxaliplatin (n = 264). Cisplatin was predominantly associated with gastrointestinal disorders (e.g., nausea) and nephrotoxicity (e.g., creatinine serum increase), carboplatin with hematologic toxicity (e.g., polyneuropathy) and respiratory issues (e.g., dyspnea), while oxaliplatin exhibited strong signals for neurological effects (e.g., peripheral neuropathy) and gastrointestinal disturbances. The BI dashboard enabled real-time monitoring of emerging ADR trends and severity assessments.

Conclusion

This study highlights the importance of tailored pharmacovigilance strategies for platinum-based drugs, emphasizing the need for continuous monitoring and proactive management of specific ADRs to improve patient safety and outcomes. The integration of AI-driven tools and BI dashboards enhances the detection and analysis of ADR signals, supporting informed clinical decision-making and optimizing drug safety in oncology.

Article Number: 11

Engineering Microbes With Enzymatic Nanoreactors And Deep Learning To Transform Sugarcane Bagasse Into FDCA For Lung Cancer Therapy And Smart Drug Delivery Solutions

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Introduction

Imagine a world where agricultural waste becomes a weapon against cancer and a tool for smarter medicine. This review explores FDCA, a sustainable chemical produced from sugarcane bagasse, as a game-changer in biotechnology. We focus on microbes engineered with encapsulated enzymatic nanoreactors and guided by deep learning to produce FDCA efficiently on a global scale. Our goal is to synthesize recent advances, showing how FDCA can be transformed into furan-based drugs to fight lung cancer and into nanocarriers for precise drug delivery. By addressing global challenges like cancer and plastic pollution, this work highlights a path toward eco-friendly solutions. We aim to bridge green biotech with healthcare, offering insights into scalable, impactful innovations for precision medicine and sustainable industry, inspired by the potential of waste-to-wellness strategies.

Materials & Methods

For this review, we conducted a comprehensive literature analysis to map the landscape of FDCA production and its applications. We searched PubMed, Scopus, Web of Science, and Google Scholar for articles from 2015 to 2025, using keywords like “FDCA synthesis,” “enzymatic nanoreactors,” “deep learning in biotech,” “lung cancer therapeutics,” “drug-delivery systems,” and “sugarcane bagasse bioconversion.” We selected 150+ peer-reviewed studies, focusing on experimental data about microbial engineering with nanoreactors, deep learning optimization, and FDCA’s therapeutic uses. We also reviewed patents and conference proceedings to capture emerging trends. Our inclusion criteria prioritized studies with detailed methodologies on FDCA yields, scalability, and biocompatibility of FDCA-derived products. We analyzed how nanoreactors improve microbial tolerance to toxic intermediates, as noted by Smith et al., 2023, and how deep learning enhances pathway efficiency, according to Patel et al., 2022. We also examined FDCA’s role in oncology, as explored by Zhang et al., 2024, and drug delivery, per Nguyen et al., 2021, comparing outcomes across studies to identify trends, gaps, and future directions in sustainable biotech and precision medicine.

Results

Our review shows that microbes with enzymatic nanoreactors achieve FDCA yields of 85% from sugarcane bagasse, with deep learning improving efficiency by 30% through pathway optimization, as reported by Patel et al., 2022. FDCA-derived furan compounds exhibit strong anticancer effects, reducing lung cancer cell growth by 60% in vitro, especially against non-small cell lung cancer, according to Zhang et al., 2024, and Li et al., 2023. FDCA-based nanocarriers enhance drug delivery precision to lung tissue by 40%, with superior biocompatibility compared to traditional systems, as shown by Nguyen et al., 2021, and Kim et al., 2022. Scalability is promising, with bioreactor yields reaching 50 g/L, per Gupta et al., 2023. These findings highlight FDCA’s dual potential in green biotech and precision medicine, offering a sustainable platform for both therapeutic and industrial applications.

Conclusion

This review positions FDCA as a cornerstone for sustainable biotechnology, produced from sugarcane bagasse using microbes with enzymatic nanoreactors and deep learning. Its ability to yield 85% FDCA, as shown by Smith et al., 2023, and support 60% lung cancer cell inhibition, per Zhang et al., 2024, underscores its therapeutic promise. FDCA-based nanocarriers, with 40% better drug delivery precision, as noted by Nguyen et al., 2021, further enhance its medical impact. Scalability to 50 g/L in bioreactors, according to Gupta et al., 2023, makes it industrially viable for biodegradable polymers. By transforming waste into solutions for cancer and drug delivery, FDCA addresses global challenges like disease and pollution. This work paves the way for future innovations, merging green biotech with healthcare to create a healthier, more sustainable world through waste-to-wellness strategies.

Article Number: 14

Pharmacotherapy Considerations In Antiemetic Prophylaxis For Chemotherapy-Induced Nausea And Vomiting

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Introduction

Although several guidelines are available aiming for optimal chemotherapy-induced nausea and vomiting (CINV) control, there still remain critical therapeutic challenges: (i) recommendations are mainly drug-based, not protocol-based; (ii) the risk of antiemetics-related interactions is not highlighted; (iii) the emetogenicity of a regimen may vary over the cycle; and (iv) the impact of the underlying malignancy is overlooked. Apparently, the existing approach seems not to be generally efficient and puts patients at risk of insufficient use of antiemetics as well as poor emesis control.

Materials & Methods

This study has re-evaluated the emetogenicity of chemotherapy regimens based on administered medications on each day, drug-drug interactions, combination therapy, and delayed CINV.

Results

A literature review was done to re-evaluate the emetogenicity of the commonly accepted chemotherapy regimens based on administered medications on each day, drug interactions, combination therapy, and delayed CINV.

Conclusion

The revised CINV prophylaxis protocols with sorted recommendations for hematologic malignancies and solid tumors have been represented, with respect to the availability of prophylactic medications.

Article Number: 37

Minimizing Preventable Adverse Drug Reactions In Iran: The Key Challenges

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Introduction

Adverse drug reactions (ADRs) is one of the most important issue in Pharmaceutical care. Some adverse effects caused by medication are the result of medication errors, which are avoidable. This article focuses on prevalence of preventable ADRs, emphasizing the need for targeted interventions for patient safety in Iran, as well as implementation challenges.

Materials & Methods

In this article, by evaluating the information obtained from the Food and Drug Administration database during 4 years from 2021 to 2024, the percentage of serious adverse preventable complications were calculated. We classified preventable complications, and evaluated the most drugs that led to these preventable complications. Then, the interventions were defined based on the type of complications and their implementation challenges were clarified.

Results

Percentage of preventable serious ADRs were 10.69, 10.99. 14.40, 15.30 from 2021 to 2024 accordingly.

We found that ceftriaxone and vancomycin are the most associated medicines with preventable side effects In addition, among the preventable side effects, the major share was related to reactions due to the history of allergy in patients which were not well evaluated with care givers.

Although the most type of preventable adverse events was allergic reactions, there are some significant challenges for reducing them in Iran. These challenges includes, inadequate documentation of drug sensitivity histories in patients' medical records, insufficient patient questioning during hospital admission, lack of access to prior medication records, patients' inability to remember drug names, careless medication dispensing practices, systemic under-reporting of ADRs, and wide distribution of ceftriaxone in community pharmacies despite legal prohibition as a hospital only.

Conclusion

To reduce the burden of ADRs in Iran, the following evidence-based strategies are proposed for reducing preventable ones. Strengthen electronic health records (EHRs) including drug allergy information or having allergy identification card systems Is first recommended strategy. Then training programs for healthcare professionals and patient education initiatives Regarding preventable ADRs would be an important solution for reducing such events. In addition, involving clinical pharmacists into care teams to identify medication errors and optimize therapy is recommended. Furthermore, implement automated medication alert systems to flag potential previous drug allergy would be essential.

Article Number: 152

Delayed Thrombosis Occurring Three Weeks After IVIG Administration: A Case Report And Clinical Considerations In High-Risk Patients

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Introduction
Intravenous immunoglobulin (IVIG) is commonly used to treat autoimmune and inflammatory disorders. Although generally safe, IVIG increases the risk of thrombosis, especially in patients with multiple risk factors. This case report discusses a patient who developed deep vein thrombosis (DVT) three weeks after receiving IVIG, despite standard thromboprophylaxis, and explores how thrombosis risks can be better managed in patients with complex medical histories.

Case Presentation
A 38-year-old woman with poorly controlled epilepsy, polycystic ovary syndrome (PCOS), and a history of long-term oral contraceptive use (discontinued two months prior) was treated with 60 g of IVIG over three days by iv line for treatment of Toxic Epidermal Necrosis. Her TEN was triggered by a dose increase of lamotrigine, which she was taking with valproate. Despite receiving enoxaparin 40 mg SC during IVIG infusion to prevent clot formation, she developed DVT three weeks later. This case illustrates how IVIG therapy, TEN, corticosteroid use, and prior oral contraceptive use can elevate thrombosis risk, even with standard prevention measures.
Due to the patient's complex medical history, a personalized approach to thrombosis prevention was essential. Factors such as IVIG therapy, TEN-related inflammation, hormonal contraceptives, and a peripheral IV line increased her thrombosis risk, which standard assessments missed. The Naranjo score for IVIG and contraceptives was 3, indicating a likely link to delayed IVIG-induced thrombosis.
Management included early mobilization, hydration, extended anticoagulation, and a central venous line for IVIG infusion. Although extended anticoagulation is promising for patients with multiple risks, clear guidelines are lacking. IVIG elevates blood viscosity and activates clotting factors, further enhancing thrombosis risk. Current risk models often overlook these complex interactions, highlighting the need for individualized monitoring. Delayed venous thromboembolism usually occurs 2–3 weeks after IVIG, while arterial thrombosis often develops within 4 to 24 hours post-infusion.

Conclusion
Delayed thrombosis after IVIG therapy is a significant concern, especially for patients with multiple risk factors like TEN or those on hormonal medications. Standard thrombosis risk models may not adequately address these complex interactions. Extended anticoagulation therapy, still under investigation, could reduce the risk of delayed clotting events in high-risk patients. Close monitoring, proper hydration, early mobilization, and central venous access are crucial in preventing thrombotic complications. Further research is needed to establish specific guidelines for long-term thrombosis prevention in these high-risk patients.

Article Number: 231

A Comprehensive Review Of Neurotoxicity Associated With Colistin: Clinical Case Series In Imam Khomeini Complex

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Introduction
Polymyxins were largely abandoned for decades due to toxicity concerns but have regained attention as last-line agents against multidrug-resistant Gram-negative bacteria. Colistin, a polymyxin antibiotic, poses significant risks of nephrotoxicity and neurotoxicity. While nephrotoxicity is more common, neurotoxic effects—such as paresthesia, dizziness, vision changes, and ataxia—can also occur. Importantly, these neurological symptoms are often reversible upon dose modification or discontinuation, highlighting the need for prompt identification and intervention.
Case Series
This case series presents four patients from Imam Khomeini Hospital who developed neurotoxic symptoms during colistin therapy.
Case 1: A 60-year-old male with a urinary tract infection (GFR = 66 ml/min) caused by Pseudomonas aeruginosa received IV colistin (3 million units q12h) and developed lip paresthesia and dizziness after the first dose. Symptoms resolved after discontinuation and supportive therapy.
Case 2: A 67-year-old woman with diabetes and CKD (GFR = 17 ml/min) was treated for a diabetic foot infection with colistin (4.5 million units q12h) and developed peripheral neuropathy and nephrotoxicity. Symptoms improved with drug discontinuation.
Case 3: A 52-year-old female with a resistant UTI (GFR = 51 ml/min) received colistin (4 million units q12h) and experienced rash, pruritus, and paresthesia. Symptoms resolved after dose adjustment.
Case 4: A 62-year-old male with diabetes and IHD (GFR = 72 ml/min) had respiratory infection from Pseudomonas and Klebsiella species. After receiving IV colistin, he developed ataxia and lip tingling, which resolved after switching to nebulized colistin.
This case series highlights neurotoxic reactions to colistin in four patients with serious comorbidities including diabetes, CKD, and IHD. Colistin doses ranged from 3 to 4.5 million units every 12 hours. Symptoms such as paresthesia, dizziness, ataxia, and rash were observed. All symptoms reversed after drug discontinuation or dose adjustment. Supportive treatments like N-acetylcysteine, vitamin B6, betahistine, and cetirizine were used successfully. Findings suggest that renal function and co-existing conditions influence neurotoxicity risk, underscoring the importance of personalized dosing and close monitoring.
Conclusion
Colistin-induced neurotoxicity is dose-dependent and often related to impaired renal function. Patients with renal insufficiency, especially diabetics, are at increased risk due to drug accumulation. Neurotoxic symptoms typically resolve after dose reduction or discontinuation. Adjunctive therapies such as antioxidants and vitamin B6 may support recovery, but further research is needed to define their role. Individualized dosing and renal monitoring are critical to minimize toxicity while maintaining therapeutic efficacy.

Article Number: 228

Impact Of Adjuvant Melatonin On Clinical Outcomes In Adult Critically Care Sepsis: A Systematic Review And Meta-Analysis Of Randomized Control Trials

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Introduction

Sepsis is a severe condition caused by an uncontrolled immune response to infection, leading to organ dysfunction. It involves inflammatory cytokine storms damaging organs like the brain and lungs. Long ICU stays can result in PICS, causing prolonged inflammation, immunosuppression, and physical decline. Standard treatments include organ support and glucose control. Melatonin, a natural hormone with antioxidant and anti-inflammatory properties, shows potential in treating sepsis by reducing oxidative stress, modulating immune responses, and protecting organ function. A focused meta-analysis aims to assess its effectiveness in critically ill adult patients.

Materials & Methods

This systematic review and meta-analysis followed PRISMA guidelines and was registered in PROSPERO (CRD42024495255). Two authors (R.S, F.M) searched MEDLINE/PubMed, Scopus, Web of Science, and Embase for studies published before April 1, 2024, with no language or time restrictions. Reference lists of included articles were also screened. Keywords related to sepsis and melatonin were used. Rayyan software was used for screening. After removing duplicates, two reviewers (A.J, F.M) independently assessed titles, abstracts, and full texts. Disagreements were resolved with a third author (E.K-R). Inclusion criteria were interventional studies on adults (≥18 years) with sepsis receiving melatonin versus control/placebo, reporting mortality. Studies lacking OR/SMD data, reviews, case reports, animal studies, or conference abstracts were excluded. Primary outcome was mortality; secondary outcomes included ventilation needs, vasopressor-free days, SOFA score, ICU/hospital length of stay. Data were extracted independently by two authors (F.M, R.S). Study quality was assessed using CONSORT 2010 (max score: 37). Two reviewers (A.A, A.J) evaluated quality, with discrepancies resolved by consensus. Meta-analysis was conducted using R software (v4.3.0). OR/SMD with 95% CI were calculated. Heterogeneity was assessed with I^2 and p-values. Fixed-effects model was used for low heterogeneity; random-effects model for high. Sensitivity analysis and Egger's test ($p<0.05$) were performed to assess robustness and publication bias. Significance was set at $p<0.05$.

Results

In the initial search, 1747 articles were identified; after removing 989 duplicates, 758 titles/abstracts were screened and 719 excluded. 39 full texts were reviewed, and 5 studies included in the systematic review, with 4 eligible for meta-analysis. All included studies were RCTs from 2022–2023, with 74 patients receiving melatonin and 75 controls. Mortality was lower in the melatonin group but not statistically significant (OR=0.54; 95% CI: 0.26–1.12; I^2=0%). ICU stay and SOFA score were significantly lower in melatonin group. No significant difference was observed in hospital stay, mechanical ventilation, or CRP levels. Some studies showed reduced procalcitonin, vasopressor need, and increased ventilator/vasopressor-free days. Egger's test showed no publication bias for mortality (P=0.76).

Conclusion

In conclusion, the current systematic review and meta-analysis proves that while melatonin shows promise as an adjuvant therapy in critically ill patients with sepsis, particularly in reducing ICU length of stay and improving SOFA scores, it does not significantly impact overall mortality or other critical outcomes such as the need for mechanical ventilation. The circadian rhythm might have had an impact on how effective melatonin was, leading to different outcomes. The positive safety record of melatonin could promote its utilization as an additional treatment to safeguard organ function during sepsis. In the future, research should be carried out to clarify the best duration and dosage of melatonin. Despite these findings, the limited number of studies and small sample sizes highlight the need for larger, high-quality randomized controlled trials to better determine the role of melatonin in the management of sepsis.

Article Number: 227

Agomelatine: The Cinderella Of Migraine Pharmacotherapy In Pediatrics?

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Introduction

With great interest, we have read the unique research paper entitled ‘‘Successful agomelatine monotherapy for an adolescent with attention deficit hyperactivity disorder and comorbid migraine” 1 Respectfully, we want to extend the results of this valuable and pioneering research to the probable therapeutic potential of Agomelatine in children's migraine.

Materials & Methods

There is considerable evidence suggesting the melatonergic system and the safe nutraceutical/clinical agent Melatonin play an un-ignorable role in the pathogenesis and management of migraine, respectively. Melatonin has even a confirmed position in prophylaxis and treatment of migraine in pediatrics 2. Considering the vasodilation as well as inflammation, as the most discussed mechanisms of migraine, it is not a serendipitous effect from Melatonin as a vasoconstrictor.

Results

In the same direction, it has been demonstrated that drugs that act on Melatonin receptors, such as the modern antidepressant Agomelatine, can affect migraine, as well 3. Aside from its effects through melatonergic system, its antagonistic activity on Serotonin 5-HT2C receptors cannot be underestimated, because since 1993 it has been shown that the neurotransmitter Serotonin is able to induce endothelium-dependent vasodilation via the 5-HT2C receptors 4.

Conclusion

Although it has not been considered yet, regarding the numerous published researches which are emphasizing the safety and efficacy of Agomelatine in children and adolescents with different neurological disorders 5, it arises to mind that this Melatonin receptor agonist deserves more attention and appraisal as an efficient novel treatment of migraine in pediatrics.

Article Number: 193

Curcumin; A Golden Opportunity To Fill Gaps In Pediatric Migraine Pharmacotherapy

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Introduction

Migraine is a common neurological disorder in children and adolescents with an estimated prevalence of 11%, which can affect the quality of life and academic performance. Recent evidence suggests that although medications such as topiramate (with and without vitamin D3 supplementation), pregabalin, levetiracetam, amitriptyline, riboflavin, flunarizine and cinnarizine may be effective in reducing the frequency of migraine attacks in pediatric patients, they are not helpful to improve quality of life improvement or decrease the duration of migraine attacks [1]. We would like to propose curcumin, a bioactive polyphenolic diketone from turmeric, as an innovative therapeutic approach for pediatric migraine and highlight its valuable effects.

Materials & Methods

Although the exact pathophysiology and etiology of migraine remain unclear, oxidative stress, inflammation and neuroendocrine disparities have been recognized as major risk factors in the onset of migraine attacks. Among the miraculous effects of curcumin, we count its antioxidant, anti-inflammatory, neuroprotective and pain-relieving properties, which make it a promising candidate for addressing migraine-related mechanisms. The remarkable effect of curcumin on migraines is therefore no coincidence. In this context, recent research has shown that curcumin offers notable benefits, including a marked decrease in the severity, frequency, and duration of migraine attacks, as well as a significant improvement in quality of life [2-6].

Results

The efficacy and safety of curcumin in children and adolescents have been confirmed [7]. In emphasizing its safety in pediatric neurological disorders, the recently published clinical study on the effect of curcumin in the treatment of intractable pediatric epilepsy should not be ignored [8].

Conclusion

Although this idea has not yet received attention, it is an indication that this natural drug deserves further consideration and evaluation as a novel, effective treatment for migraine in children that could potentially improve the quality of life of these patients.

Article Number: 166

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چهاردهمین همایش داروسازی بالینی ایران

بررسی مکانیسم های سروتونرژیک آگوملاتین و دیگر آگونیست های ملاتونین در فارماکوتراپی میگرن: یک معمای بالینی

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مقدمه

امروزه دخالت گیرنده های سروتونرژیک در میگرن بعنوان شایع ترین اختلال نورووااسکولار که بروز آن با علل بسیار متنوعی در سطح مولکولار مرتبط نشان داده، محرز می باشد به نحویکه گیرنده های سروتونرژیک HT2B۵،HT1B-۵- (مرتبط با انقباض عروق) و HT1D-۵ (مرتبط با مهار ریلیز نوروپپتیدهای درد) هدف طراحی بسیاری از داروهای ضد میگرن قرار می گیرند. در این میان آگوملاتین، آنالوگ نفتالینی ملاتونین که اثرات ضد میگرن اثبات شده ای دارد و فرضیه ی اثربخشی آن در میگرن کودکان نیز اخیرا توسط ما به چاپ رسیده، بر گیرنده های سروتونرژیک بویژه HT2C-۵ موثر نشان داده است. لذا این مطالعه بر آن شد تا با بررسی اتصال آگونیست های ملاتونین به ساب تایپ های مختلف گیرنده های سروتونرژیک، به بررسی مکانیسم های سروتونرژیک محتمل در اثرات ضد میگرن این دسته از داروها بپردازد.

مواد و روش ها

در این مطالعه پایداری کمپلکس دارو-گیرنده ملاتونین و آنالوگ های ساختاری آن شامل آگوملاتین، رامِلتئون، و متابولیت های تعرفه شده ی آنها به روش داکینگ مولکولی در برابر گیرنده های HT1B-۵ با PDB codes: 4IAR, 5V54, 7C61 نیز HT2B-۵ با PDBIDs: 4IB4, 5TVN, 7SRS مورد محاسبه قرار گرفتند. موفق ترین ترکیب از مرحله ی نخست این بررسی ها در برابر گیرنده HT2C-۵ با PDBID: 6BQH نیز بررسی شد و در نهایت پایداری بهترین کمپلکس توسط دینامیک مولکولی تائید گشت. بررسی Binding mode، RMSD، RMSF، و انرژی آزاد اتصال نتایج قابل ملاحظه ای را بدست داده اند.

نتایج

ترکیبات ملاتونرژیک مورد بررسی در این مطالعه در سطح گیرنده های HT2B۵ انرژی های اتصال پایدارای را نشان دادند. این دلتا جی اتصال برای رامِلتئون، آگوملاتین، و ملاتونین به ترتیب ۷.۲۳, ۶.۶۲, ۶.۲۱ Kj/mol محاسبه شدند. این ترکیبات همچنین در سطح گیرنده HT2C۵ نیز از نظر دلتا جی اتصال مقادیر ۷-۵.۹ Kj/mol را نشان دادند. جالب آنکه بایندینگ مود بهترین ترکیبات ملاتونرژیک مورد بررسی در این مطالعه در اتصال به گیرنده های سروتونینی عینا یکسان بوده است. بدین ترتیب که همگی در اتصال به HT1B-۵ اسید آمینه های کلیدی Phe341, Asp135 را درگیر نموده اند، و در اتصال به گیرنده HT2C۵ نیز همگی با Asp134, Leu209 میانکنش داده اند.

نتیجه گیری

حوالی سالهای ۲۰۰۵ مطالعات محدودی رامِلتئون را فاقد اثر بر دیگر گیرنده های CNS من الجمله رسپتورهای سروتونینی معرفی نمود اما با توجه به آشکار شدن دخالت گیرنده های سروتونرژیک در اثرات ضد میگرن آنالوگ ساختاری رامِلتئون (آگوملاتین) از یک سو و کشف اثربخشی رامِلتئون در میگرن از سوی دیگر، نیازمند مطالعات تبیین کننده بیشتری هستیم. چراکه تداخل داروهای ملاتونرژیک و سروتونرژیک بعنوان لیگاندهای موثر بر گیرنده های یکسان، می تواند با توجه به مقوله ی رقابت از اثربخشی آنها بکاهد و منجر به تجویز رژیم های درمانی ناکارامد شود.

Article Number: 79

بررسی in silico مکانیسم های عروقی و التهابی آگوملاتین و دیگر آگونیست های ملاتونین در فارماکوتراپی میگرن

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مقدمه

میگرن یکی از ناتوان کننده ترین اختلالات سردرد اولیه، با شیوع بیش از یک بیلیون فرد در جهان است. از جمله پاتوفیزیولوژی مطرح می توان وازودیلیشن عروق و التهاب نوروژنیک را برشمرد. ملاتونین که به تازگی در درمان میگرن جایگاه یافته، با مکانیسم هایی همچون مهار سنتز پروستاگلاندین E2 و نیتریک اکسید ، مهار سمیت تحریکی گلوتامات، و سرکوب آزادسازی وازودیلاتور CGRP عمل می کند. این مطالعه in silico مکانیسم های عروقی و التهابی محتمل در اثرات ضد میگرن آگونیست های ملاتونین من الجمله آگوملاتین را که فرضیه اثربخشی آن در میگرن کودکان اخیرا توسط ما به چاپ رسیده، مورد بررسی قرار داده است.

مواد و روش ها

در این مطالعه لیگاندهای ملاتونین، آگوملاتین، Ramelteon، متابولیت ها و آنالوگ های ساختاری آنها با استفاده از محاسبات داکینگ مولکولی در سطح گیرنده های CGRP با PDBIDs: 6ZHO, 6PFO, 6E3Y, 3N7R و نیز آنزیم سیکلواکسیژناز با PDBIDs: 4M11, 1PXX, 4RRW بررسی شد و بهترین نتایج حاصله با شبیه‌سازی دینامیک مولکولی مورد ارزیابی قرار گرفت. انرژی اتصال و طبیعت تعاملات پروتئین-دارو از خروجی آنالیزهای انجام شده (RMSF، RMSD، binding mode و دلتا جی) استخراج شد.

نتایج

در این محاسبات کلیه ترکیبات ملاتورنرژیک مورد بررسی با انرژی های اتصال منفی معنا داری با اکتیوسایت CGRP و سیکلواکسیژناز اتصال برقرار می کنند. آگوملاتین، ملاتونین، و راملتئون در اتصال با گیرنده های CGRP به ترتیب انرژی های -۶.۲۱، -۵.۹۲، و -۵.۹۱ kj/mol را ضمن برقراری اتصال با اسید آمینه کلیدی Arg2119 نشان داده اند. این ترکیبات در اتصال با محل اتصال ملوکسیکام در سطح آنزیم COX2 نیز به ترتیب انرژی های -۷.۹۰، -۷.۴۳، و -۷.۰۸ kj/mol نشان داده اند. تمامی ترکیبات مورد بررسی اسید آمینه های کلیدی Arg120 و Ser530 را قویا بصورت هیدروژنی مشابه با ضد التهاب های غیر استروئیدی oxicam درگیر می سازند. در تمامی موارد آگونیست های ملاتونین کمپلکس های پایدارتری در مقایسه با ترکیب آندوژن ملاتونین نشان دادند.

نتیجه گیری

داروهای ملاتونرژیک موجود را می توان نسل جدید داروهای ضد میگرن بشمار آورد که با توجه به مکانیسم های مختلف مطرح، می توان آنها را داروهای چند تارگتی کارا و امنی در نظر گرفت که حتی در کودکان نیز قابل تجویز هستند. بررسی های بالینی بیشتر برای تبیین پروتوکل درمان- پیشگیری از میگرن در خصوص این داروها می تواند باب جدید و امیدبخشی برای بیماران مبتلا به میگرن را بگشاید.

Article Number: 78

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بررسی دانش دارویی بیماران آسمی و ارتباط آن با موربیدیته این بیماران

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مقدمه

دانش دارویی بیماران مبتلا به آسم بر کنترل بیماری و سطح پایبندی آن‌ها به درمان تأثیر قابل‌توجهی دارد. از سوی دیگر، پایبندی ناکافی به درمان می تواند به مدیریت نامناسب و کنترل ضعیف بیماری منجر گردد. این مطالعه با هدف، تعیین دانش دارویی بیماران آسمی با استفاده از پرسشنامه استاندارد ترجمه شده Mcpherson وتعیین ارتباط آن با موربیدیته در این بیماران طراحی و اجرا شد.

مواد و روش ها

این مطالعه، یک مطالعه توصیفی-تحلیلی و مقطعی است که بر روی بیماران مبتلا به آسم بالای ۱۵ سال که در فاصله زمانی مرداد تا دی ۱۴۰۳ به درمانگاه ریه بیمارستان مسیح دانشوری مراجعه کرده‌اند، انجام شد. پس از استانداردسازی ترجمه فارسی پرسشنامه دانش دارویی Mcpherson، یک فرم گرداوری اطلاعات مشتمل بر خصوصیات سوشیودموگرافیک و سوابق دارویی-پزشکی بیماران، پرسشنامه Mcpherson، و پرسشنامه موربیدیته Jone's تهیه و مورد استفاده قرار گرفت. اطلاعات ابتدا وارد نرم افزار Excel شده و پس از آماده سازی داده ها، با استفاده از نرم افزار SPSS (version 26.0) مورد تجزیه و تحلیل های آماری مناسب قرار گرفتند. در کلیه آزمون‌های آماری، سطح معنی داری $p<0.05$ در نظر گرفته شد.

نتایج

۲۰۰ بیمار شامل ۱۲۱ (۶۰.۵۰٪) زن و ۷۹ (۳۹.۵۰٪) مرد با میانگین سنی ۱۲.۹۴±۳۴.۶۰ سال وارد مطالعه شدند. ۳۸٪ (۷۶ نفر) بیماران دارای دانش دارویی ≤۵ (گروه آگاه) بودند و ۶۲٪ (۱۲۴ نفر) از بیماران دارای دانش دارویی>۵ (گروه ناآگاه) بودند. ۳۸.۵۰٪ (۷۷ نفر) بیماران دارای موربیدیته پایین، ۳۴٪ (۶۸ نفر) از بیماران دارای موربیدیته متوسط و ۲۷.۵۰٪ (۵۵ نفر) بیماران دارای موربیدیته بالا بودند. تحلیل آماری نشان داد که بین سطح دانش دارویی بیماران و موربیدیته ارتباط معنادار معکوسی وجود داشت ($p<0.001$). بررسی ارتباط متغیرهای مورد مطالعه و دانش دارویی، با استفاده از آنالیز رگرسیون خطی چندمتغیره، نشان داد که متغیرهای سطح تحصیلات (رابطه مستقیم)، مالکیت خانه (رابطه مستقیم)، آلرژی دارویی (رابطه مستقیم)، تعداد حملات آسم شبانه در یک ماه اخیر (رابطه معکوس)، شناسایی تاریخ انقضا توسط بیمار (رابطه مستقیم)، سابقه دریافت آموزش در مورد بیماری آسم (رابطه مستقیم) در مدل نهایی باقی ماندند ($p=0.001$).

نتیجه گیری

در مطالعه ما، درصد قابل توجهی (۶۲٪) از بیماران مبتلا به آسم، از دانش دارویی کافی برخوردار نبودند. ارتباط معکوس دانش دارویی با موربیدیته، نشان از اهمیت ارتقای دانش دارویی بیماران آسمی دارد. بویژه بیماران آسمی دارای سطح اجتماعی-اقتصادی و سواد سلامت پایین تر باید در اولویت مستمر برنامه های هدفمند و ساختارمند ارتقای دانش دارویی قرار گیرند. به نظر می رسد بهره مندی از داروسازان به عنوان خبرگان دارویی، در امر آموزش بیماران آسمی بتواند راه حل مناسبی برای ارتقای سواد سلامت و دانش دارویی این بیماران باشد.

Article Number: 64

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خیابان مشاهیر، خیابان غفاری، پلاک ۷، انجمن متخصصین داروسازی بالینی
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Efficacy Of Saffron Supplementation As An Adjunct To Standard Therapy In Children With ADHD: A Double-Blind Randomized Placebo-Controlled Clinical Trial

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Introduction
Attention-deficit/hyperactivity disorder (ADHD) is a prevalent neurodevelopmental condition in children, generally managed by pharmacological intervention such as methylphenidate. Recent interest has focused on identifying adjunctive treatments that enhance therapeutic outcomes with potentially fewer side effects. This study investigated the efficacy of saffron (Krocina®) supplementation as an adjunct to standard ADHD therapy in a pediatric population.
Materials & Methods
A double-blind, randomized, placebo-controlled clinical trial was conducted on 90 children diagnosed with ADHD according to DSM-5 criteria. Participants were randomized to receive either an intervention of daily Krocina (7.5 mg for <30 kg; 15 mg for ≥30 kg) or placebo, in addition to standard methylphenidate therapy, for a period of 12 weeks. ADHD symptom severity was assessed using the ADHD Rating Scale-IV (ADHD-RS-IV) and Conners' Rating Scales at baseline, at week 6, and at week 12.
Results
Analysis showed a significant improvement in both ADHD-RS-IV and Conners' scores in the saffron group compared to placebo at both week 6 and week 12. Furthermore, the intervention group required lower doses of methylphenidate while still demonstrating strong clinical response. No serious adverse events were reported.
Conclusion
Adjunct saffron supplementation resulted in significant symptomatic improvement in children with ADHD and reduced the need for higher doses of methylphenidate. These findings support the integration of Krocina as a safe and effective adjunctive therapy for pediatric ADHD. Further research is warranted to confirm these results and elucidate underlying mechanisms.
Article Number: 90

Evaluation Of The Effects Of A Four-Drug Regimen With N-Acetylcysteine And Comparing It With A Four-Drug Regimen In Eradicating Helicobacter Pylori In Patients With Helicobacter Pylori Infection: A Randomized, Multicenter, Clinical Trial

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Introduction
Helicobacter pylori (H. pylori) infection is a major cause of peptic ulcer disease and gastric cancer. Standard therapies are increasingly failing due to Antimicrobial resistance and treatment-related side effects. N-acetylcysteine (NAC), known for its ability to disrupt bacterial biofilm, may enhance eradication rates. This study aimed to evaluate whether adding NAC to standard treatment improves eradication outcomes and reduces adverse effects in H. pylori-infected patients.
Materials & Methods
In this randomized, multicenter clinical trial, 153 patients with biopsy-confirmed H. pylori infection were enrolled. They were randomly divided into two groups. 81 patients in the intervention group received standard quadruple therapy (clarithromycin, amoxicillin, esomeprazole, bismuth), and 72 patients in the control group received the same regimen with an additional 600 mg NAC twice daily for two weeks. Treatment efficacy was evaluated at least six weeks later using fecal antigen testing. Side effects were monitored weekly, and taste disturbance was scored using a numerical rating scale (0–10). Statistical analysis was performed using SPSS.
Results
The eradication rate was significantly higher in the NAC group compared to the control group (83.8% vs. 53.2%, $p < 0.001$). NAC was associated with fewer reports of taste disturbance ($p < 0.001$), but a higher incidence of diarrhea ($p = 0.010$). In patients with intestinal metaplasia, peptic ulcers, or severe gastritis, no significant differences in eradication rates were observed between the two groups.
Conclusion
Adding NAC to standard therapy significantly improved H. pylori eradication and reduced taste-related side effects, though it increased the risk of diarrhea. The benefit was not observed in patients with more severe gastric pathology. NAC may be a promising adjunct in overcoming antibiotic resistance-related treatment failure and improving patient tolerance.
Article Number: 59

Postoperative Pain Control After Abdominal Hysterectomy

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Introduction

Background: Hysterectomy is a common procedure in non-pregnant women, which is for Cancer treatment, controlling bleeding, and treating fibroids. Among Women aged-18_44, hysterectomy is prevalent. Women with diabetes and multiparity are even more prevalent. Controlling pain after this surgery is a Challenge.

Materials & Methods

Methods: A review was conducted using the PubMed and Google Scholar databases. Keywords used in the search were: postoperative pain, pain management, hysterectomy, multimodal analgesia, gabapantinoids, non-opioid analgesics, regional anesthesia and TAP block.

The primary Drug used in this procedure is a parenteral opioid; however, there is a wide range of adverse effects in this medication. The main problems with IV opioids are respiratory suppression and the potential for abuse.

Results

Results: Due to the ADRs mentioned before, new pain management regimens are suggested. Studies compared MMPC (multi-model pain control) with morphine PCA. MMPC consists of gabapentin (300 mg PO every 6hours), acetaminophen (1g IV every 8 hours for 24 hours), ketorolac (15mg IV every 6 hours for 48 hours), morphine PCA (2mg IV every 10 min) and Oxycodone/acetaminophen 10/325 mg po every 6hours. The length of hospital stays in patients receiving MMPC was reduced compared to patients who received morphine alone. More studies have shown that gabapentin 300 mg compared to tramadol 100 mg was more effective in controlling VAS score and lower ADR such as nausea, vomiting, and sedation. Researchers have shown that the route of administration can be important as well as the classification of Drugs: A Single 100 mg diclofenac suppository led to a meaningful decrease in VAS score, and fewer patients required additional pain relief within the first 6 hours of surgery.

Conclusion

Conclusion: Postoperative pain management after hysterectomy can be more effective when a multimodal approach is used. Based on a variety of effective medications, healthcare institutions can modify post-operative pain management protocols and reduce the need for parenteral opioids.

Article Number: 168

Investigating And Comparing The Severity And Prevalence Of Ventilator-Induced Pneumonia In Patients Taking Famotidine And Pantoprazole In The Intensive Care Unit; A Clinical Trial

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Introduction
Patients admitted to the intensive care unit (ICU) are at high risk of gastrointestinal (GI) mucosal injury and stress ulcers, which may lead to gastrointestinal bleeding, due to their critical condition and use of mechanical ventilation. Stress ulcer prophylaxis drug regimens, including proton pump inhibitors (PPIs) and histamine type 2 receptor antagonists (H2RAs), are commonly used to prevent these complications. However, there are concerns about the side effects of these drugs, including an increased risk of ventilator-associated pneumonia (VAP). This study aimed to compare the effects of pantoprazole and famotidine on clinical outcomes and the risk of VAP in patients admitted to the ICU.
Materials & Methods
This study was designed as a single-center, randomized clinical trial conducted in the Intensive Care Unit (ICU). The study population included 138 patients admitted to the ICU who required mechanical ventilation. The treatment regimens studied included two groups which group 1 received intravenous pantoprazole (40 mg daily) and group 2 received intravenous famotidine (20 mg, twice daily). The study's primary outcome measure was the incidence of VAP, which was assessed according to ATS/IDSA and CDC guidelines. Other clinical variables included ICU length of stay, APACHE score, and incidence of adverse events.
Results
The results showed that in the famotidine group, ICU length of stay and APACHE II score were significantly shorter than in the pantoprazole group. However, no statistically significant differences were observed in variables such as age, weight, drug administration duration, and intubation duration. In addition, the frequency of death and pneumonia incidence in the famotidine group was lower than in the pantoprazole group, although this difference was not statistically significant.
Conclusion
This study showed that both famotidine and pantoprazole are effective in the prophylaxis of stress ulcers in critically ill ICU patients, but famotidine may be associated with more favorable clinical outcomes, including reduced length of stay and severity of illness. Also, the use of gastric acid suppressant drugs is associated with an increased risk of VAP, which requires more attention to drug selection and patient management. The findings of this study can help in better decision-making regarding the use of SUP drugs in ICU patients.

Article Number: 29

Etoposide Induced DIC In A 22-Year-Old Male With AML Relapse: A Case Report

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Introduction

Etoposide is a broad-spectrum and relatively well-tolerated chemotherapy agent that primarily affects cell cycle in the late S and G2 phases via inhibition of topoisomerase II. Etoposides Adverse effects include dose-limiting myelosuppression, gastrointestinal toxicity (nausea, vomiting, and stomatitis), anorexia, alopecia, mucositis, diarrhea ,radiation recall skin changes and an increased risk of secondary malignancies. Acute hypersensitivity reactions can occur During intravenous administration of etoposide. Patients can experience flushing, bronchospasm, cyanosis, hypertension, or hypotension which usually resolves within minutes after discontinuing the intravenous administration. This, to our knowledge, is the first report of DIC, a syndrome characterized by the systemic activation of blood coagulation , following the intravenous administration of etoposide.

Case Presentation

A 22-years-old Caucasian male (D.A.) was admitted with a known history of acute myeloid leukemia (AML) due to disease relapse. EMA chemotherapy regimen was chosen as the best possible combination. He was receiving the first dose of etoposide on 22nd June when he presented fever, hypotension, epistaxis and gum bleeding within 20minutes of infusion. On the second day, continuing EMA chemotherapy, patient again reacted to etoposide infusion at the same proportion of drug, this time with fever and chills, decreased oxygen saturation and decreased consciousness. Infusion was stopped, platelet transfusion was ordered and pharmacotherapy consult was demanded.

The patient was diagnosed with DIC based on clinical presentation (active bleeding) and laboratory findings consistent with coagulopathy (elevated PT/INR, prolonged PTT).

Conclusion

The treatment plan was developed around suspected drug-induced DIC and involved holding etoposide infusion, initiating methylprednisolone with a 1 mg/kg dose, transfusing platelets and fresh frozen plasma (FFP) to correct coagulopathy, adjusting Giltertinib dosage due to potential toxicity concerns when combined with Voriconazole, considering alternative chemotherapy regimens like Venetoclax + Azacitidine or CLANG chemotherapy regimen if necessary. Following these interventions, the patient experienced improvement in symptoms as evidenced by reduced severity of DIC manifestations after discontinuing etoposide; however, detailed long-term outcomes were not specified in this report summary.

Article Number: 143

Suzetrigine For The Treatment Of Moderate To Severe Acute Pain

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Introduction
Every year, millions of patients experience acute pain due to trauma, illness, or surgical procedures. Presently, treatment options encompass a variety of analgesics and central nervous system (CNS) medications, including acetaminophen, nonsteroidal anti-inflammatory drugs, local anesthetics, antidepressants, anticonvulsants, and opioids. These medications operate through mechanisms that are not exclusively related to pain sensation, signal transmission, or perception. Consequently, they may produce side effects that lead to insufficient pain management, as they influence multiple targets. Suzetrigine is a new drug that has entered the market and has the potential to revolutionize pain management. In this review, we intend to examine the mechanism of action, efficacy, safety, and possible interactions of this drug.
Materials & Methods
We conducted a literature search in PubMed, Scopus, and Cochrane Central Library on articles, using keywords such as suzetrigine,VX-548, NaV1.8 inhibitor, acute pain and pain management. After screening the titles and abstracts, the full text of the articles were reviewed. Inclusion criteria encompassed human trials, safety studies and investigations into suzetrigine's mechanism.
Results
Suzetrigine (initially labelled VX-548) an oral, non-opioid drug, is a potent and selective inhibitor of Voltage-gated sodium channel 1.8 (NaV1.8), which is marketed as 50 mg tablets. This channel is specifically expressed in peripheral neurons. Due to selective inhibition of NaV1.8 and its exclusive expression in the brain, suzetrigine has no addictive potential and does not cause euphoria or excitement. The starting dose of suzetrigine is 100 mg, and after 12 hours, one 50 mg tablet is taken every 12 hours. Suzetrigine should not be used alongside potent CYP3A4 inhibitors. Suzetrigine can reduce moderate-to-severe surgical and non-surgical acute pain. The reduction in mean numeric pain rating scale (NPRS) is greater with suzetrigine versus placebo. The most frequently reported adverse events are headache, constipation, nausea, itching, muscle spasms, increased creatine phosphokinase and rash.
Conclusion
Suzetrigine presents a new non-opioid alternative for patients experiencing moderate to severe acute pain. Further clinical research is essential to assess whether suzetrigine can serve as an effective alternative to opioids.
Article Number: 133

Risk Factors And Management Of Chemotherapy-Induced Hepatotoxicity

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Introduction
The liver plays a crucial role in the digestive system regarding various drugs and toxins, making it particularly vulnerable to damage induced by medications, especially cytotoxic chemotherapy regimens. The toxicity of chemotherapy drugs is a primary factor contributing to poor therapeutic outcomes in numerous cancer patients.The hepatotoxic effects of conventional chemotherapies include the elevation of liver function tests (LFTs), hepatitis, cholestasis, steatohepatitis, and hepatic veno-occlusive disease. A wide range of chemotherapy classifications have been shown to cause hepatotoxicity, including antitumor antibiotics,alkylating agents, platinum-based drugs, antimetabolites, antimicrotubular agents, and topoisomerase inhibitors.Hepatotoxicity is known as a limiting factor in the administration of anticancer treatments. Proper monitoring and strategies such as drug discontinuation or dose modification are generally necessary when hepatotoxicity occurs.

Materials & Methods
Searches were performed using three databases: PubMed, Google Scholar, and Scopus. The strategy for literature search was represented by chemotherapy and hepatotoxicity Also, words related to chemotherapy and hepatotoxicity were searched at the title and abstract levels. 25 articles were included in the study published within the last 4 years.

Results
Hepatotoxicity is a frequent clinical complication arising from various anticancer treatments. The inherent toxicity of these therapies necessitates that oncologists and hepatologists collaborate closely to monitor patients for hepatotoxicity and intervene to prevent permanent liver damage. Considering recent advancements and in vitro studies, we have identified strategies to manage and reduce hepatotoxicity. This development holds significant potential for application in clinical settings. This review offers an examination of hepatotoxicity associated with chemotherapy, along with strategies for effective management. Implementing effective monitoring strategies, rapid assessments, and adopting informed clinical decisions enable oncologists to identify hepatotoxicity and take appropriate interventions.

Conclusion
A retrospective study found that PPIs use, liver disease, or hepatitis B virus infection were correlated with higher hepatotoxicity rates. Additionally, CYP3A4 inducers in patients receiving lapatinib or erlotinib and low body weight in patients receiving imatinib raised hepatotoxicity. In clinical attitude the following suggestions are considered to reduce hepatotoxicity:
1. Herbal Compounds such as Thymol, Dihydromyricetin, Curcumin, Silymarin, Arbutin, Rutin, Tannic acid, Ginkgetin, Panax ginseng, Esculetin, Manool can be effective.
2. Complementary drugs like Piracetam, Alpelisib, l-carnitine and infliximab, Levocarnitine, MgIG, Niclosamide, atorvastatin are some recommended Adjunct Medications.
3. Healthier lifestyle and regular physical activity support liver health.
4. Targeted therapies, special Regimes, individualized medical care, steroids and NAC could be helpful. In some cases, it is necessary to change the medication.

Article Number: 52

Comparison Of The Effectiveness Of Three Regimens Of Injectable Pantoprazole, Oral Pantoprazole And injectable Famotidine In Achieving The Target Gastric Ph Range For The Prevention Of Stress Ulcers In Patients Admitted To The Intensive Care Unit

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Introduction
Stress ulcers are the upper gastrointestinal ulcers that cause through acute physiological stress such as severe disease, infection or head trauma. This is usually occurred after the first few days of hospitalization. PPIs and H2 blockers are typically known as the first line treatment. These medicine have a different mechanism, but eventually they reduce gastric acidity and improve gastrointestinal ulcer. There is still uncertainty regarding the optimal choice of an agent for the prevention of stress ulcers, and there is considerable variability in the clinical setting when choosing a drug for critically ill patients. Therefore, in this study, we decided to compare the effects of injectable famotidine, injectable pantoprazole, and oral pantoprazole on the amount of gastric acidity change in patients admitted to the intensive care unit. In order to select the optimal drug regimen with the lowest cost and complications.

Materials & Methods
In this randomized clinical trial, patients over 18 years of age hospitalized in the intensive care unit who had a NG tube and an OG tube and were indicated for the prevention of gastric ulcers were included in this study on the condition that they signed an informed consent form. Patients with a history of bariatric surgery, gastrectomy surgery, active gastrointestinal ulcer or gastrointestinal bleeding, and gastric malignancy, also, patients who had received PPI and H2 Blocker medications in the past 5 days were excluded from the study. 60 patients, including 20 patients in the injectable pantoprazole group, 20 patients in the oral pantoprazole group, and 20 patients in the injectable famotidine group, were enrolled in the study based on a randomization table, and each patient was studied for 7 days. On the first, third, fifth and seventh days, half an hour after the Morning, noon, and evening gavage, the patient digestive fluid was lavage to measure the gastric pH using a pH meter (Laboratory digital pH meter and paper pH meter (confirmed by two people to avoid litmus paper observer error)). Injectable pantoprazole and injectable famotidine were administered intravenously, and oral pantoprazole granules were administered without crushing. Also, the inflammatory index CRP/Alb, lymphocyte to neutrophil ratio, and platelet to lymphocyte ratio were checked on the first and seventh days. SPSS 22.0 was used for full statistical analysis. Quantitative data were reported as mean (standard deviation) and qualitative data as number (percentage). Shapiro–Wilk test was used to test the normality of variables in each group. ANOVA for continuous variables and chi-square for discrete variables were used to examine differences between groups. A two-tailed p value of less than 0.05 was considered statistically significant.

Results
There was no significant difference in the mean gastric pH measured between the groups, but the difference in gastric pH between days in each group was significant. The trend of gastric pH changes within the groups was statistically significant, and in the oral pantoprazole group, the gastric pH decreased with a lower slope.In terms of length of stay in ICU, length of stay in the ward, mortality and airway resistance, no significant difference was found between the three groups. The CRP to albumin ratio was significantly different between the first and seventh days. The lymphocyte to neutrophil ratio was significantly different between groups. In the post-hoc test for the difference between groups in the lymphocyte to neutrophil ratio, the difference between groups 1 and 2 (p-value = 0.000) and 1 and 3 (p-value = 0.015) was significant, and the difference between groups 2 and 3 was not significant (p-value = 0.144). The platelet to lymphocyte ratio was not significantly .

Conclusion
Overall, the results of this study, as well as other studies conducted to date, indicate that there is no significant difference between injectable pantoprazole, oral pantoprazole, and injectable famotidine in preventing stress ulcers in the first seven days of ICU admission. However, all three interventions were able to significantly change gastric pH and can be used as effective interventions for preventing stress ulcers in ICU patients.

Article Number: 125

Evaluation Of The Effect Of Febuxostat Administration On Changes In Selected Inflammatory Markers In Septic Patients Admitted To The ICU Of Imam Reza Hospital, Tabriz

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Introduction

Sepsis is a serious inflammatory condition caused by a dysregulated immune response to infection, often leading to organ failure, instability, and high mortality. Although critical care has improved, managing sepsis remains difficult due to its complex immune mechanisms. Oxidative stress and elevated IL-6 levels are key factors in sepsis progression and severity.

Febuxostat, a xanthine oxidase inhibitor, has anti-inflammatory and antioxidant effects that may help modulate these pathological pathways. This randomized clinical trial assessed the impact of febuxostat on IL-6, CRP, and severity scores (SOFA, qSOFA, APACHE II) in septic ICU patients. The study was approved by the ethics committee and registered in the Iranian Registry of Clinical Trials (IRCT20230814059148N1).

Materials & Methods

Methods This randomized clinical trial was conducted on eligible septic patients who were randomly assigned to either an intervention group or a control group. The intervention group received 80 mg of febuxostat orally once daily for 10 days, while the control group received standard care without febuxostat. Baseline demographic characteristics were recorded for all patients (Table 1). To evaluate treatment efficacy, serum levels of IL-6 and CRP were measured on days 0 (prior to treatment) and 3, and severity scores (SOFA, qSOFA, and APACHE II) were assessed on days 0, 3, and 10. Normality of the data was assessed using standard tests, which revealed non-normal distribution in most variables. Accordingly, non-parametric tests were applied: the Mann-Whitney U test was used for between-group comparisons, the Wilcoxon signed-rank test for within-group two-timepoint comparisons, and the Friedman test for three-timepoint analyses. Missing data points were excluded from their respective analyses. A p-value of less than 0.05 was considered statistically significant.

Results

Out of 40 enrolled patients, 5 died by day 3 and 4 more by day 10 (total: 9). No significant change was found in vital signs (blood pressure, temperature, respiratory rate, heart rate, oxygen saturation) in either group during the 10-day study period.

IL-6 and CRP levels significantly decreased in both groups by day 3 ($p<0.01$), with more pronounced reductions in the febuxostat group. In contrast, the control group showed some cases of increase or no change. Between-group comparison for IL-6 on day 3 approached significance ($p=0.074$), while the CRP difference was not significant ($p=0.289$).

SOFA, qSOFA, and APACHE II scores significantly declined in both groups ($p<0.001$), with a more consistent trend of improvement in the febuxostat group. Trends in the inflammatory markers over the study period are illustrated in Figures 1 to 5.

Conclusion

Febuxostat significantly reduced IL-6 and CRP levels in septic patients and improved severity scores including SOFA, qSOFA, and APACHE II. While some between-group differences were not statistically significant, the overall reduction trends in the febuxostat group were more consistent and clinically relevant. These findings align with previous studies demonstrating the anti-inflammatory and antioxidant properties of febuxostat and support its potential role in modulating oxidative stress and systemic inflammation in sepsis. The observed reduction in IL-6, a key cytokine in sepsis pathogenesis, may contribute to better clinical outcomes and prognosis. Although this study had limitations such as small sample size and short follow-up duration, the results are promising and suggest febuxostat as a potential adjunctive therapy in the management of septic patients. Future multicenter trials with larger populations are needed to confirm and generalize these findings.

Article Number: 196

Comparison Of Lithium Carbonate And Sodium Valproate On Oxidative Stress On Patients With Acute Mania

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Introduction

Bipolar disorder (BD) is a complex psychiatric condition characterized by recurrent manic episodes. Oxidative stress (OS) is involved in BD pathophysiology, contributing to mitochondrial dysfunction and neuroinflammation. Although lithium carbonate and sodium valproate are known for their antioxidant effects, we compared both their effects on OS and their clinical outcomes in patients with BD during acute mania.

Materials & Methods

This observational cohort study was conducted on 40 patients with BD during the acute manic phase. Patients were divided into two groups to receive either lithium carbonate (n = 20) or sodium valproate (n = 20) alongside risperidone over a four-week period. Oxidative stress levels were measured using the Pro-oxidant/Antioxidant Balance (PAB) test at baseline and at the end of treatment period. Clinical outcomes were assessed using the Young Mania Rating Scale (YMRS) and Clinical Global Impression (CGI) scale during the treatment period.

Results

Both treatment groups demonstrated reductions in OS and improvements in clinical symptoms. OS levels decreased from 113.08 ± 29.58 to 111.15 ± 41.19 in the lithium carbonate group and from 106.72 ± 29.16 to 96.93 ± 36.16 in the sodium valproate group. YMRS and CGI scores improved in both groups. However, none of the observed changes reached statistical significance within or between groups.

Conclusion

Both lithium carbonate and sodium valproate demonstrated reductions in oxidative stress levels and improvements in clinical outcomes during the four-week treatment period. Although the changes were not statistically significant, the observed trends suggested that both treatments may contribute to oxidative stress amelioration and symptom improvement. Further studies are needed to elucidate the role of OS in BD treatment during acute mania.

Article Number: 94

Evaluation Of The Effect Of The Oral Formulation Prepared From The Extract Of Pomegranate For The Treatment Of Benign Prostate Hyperplasia: A Triple-Blind Randomized Clinical Trial

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Introduction

Benign prostatic hyperplasia (BPH) is a common condition affecting older men, primarily driven by hormonal imbalances and inflammation. This study aimed to investigate the effects of pomegranate peel extract, rich in anti-inflammatory and antioxidant polyphenolic compounds like anthocyanins and tannins, on BPH symptoms compared to a placebo.

Materials & Methods

Forty patients aged 50-80 with mild to moderate BPH from Ghaem Hospital in Mashhad were randomly assigned to either the treatment or control group. The treatment group (20 patients) received 250 mg of pomegranate peel extract capsules three times daily alongside tamsulosin 0.4 mg nightly. In comparison, the control group (20 patients) received lactose capsules as a placebo plus tamsulosin 0.4 mg each night. The severity of lower urinary symptoms was assessed using the International Prostate Symptom Score (IPSS), along with prostate size via ultrasound and Prostate-specific antigen (PSA) serum levels, at baseline and after 2 and 4 months.

Results

Baseline prostate sizes and symptom scores were similar between groups ($P > 0.05$). At the 4-month follow-up, the pomegranate peel extract group demonstrated significantly lower symptom scores compared to the placebo group, although no differences were observed at the 2-month mark.

Conclusion

As indicated by the IPSS, a daily regimen of 250 mg of pomegranate peel extract for four months effectively alleviated BPH symptoms. This suggests its potential as a treatment option for BPH, warranting further human studies to explore its efficacy.

Article Number: 88

Assessment Of Drug-Drug Interactions Among Patients With Hematologic Malignancy: A Clinical Pharmacist-Led Study

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Introduction

Patients with hematologic malignancies often receive multiple medications, leading to potential drug-drug interactions (DDIs). Identifying and managing these DDIs is crucial for ensuring patient safety and effective care. This study aimed to identify and describe DDIs and associated factors in hematologic malignancy patients.

Materials & Methods

This prospective interventional study was conducted at a referral center and included hospitalized patients with hematologic malignancies who were receiving at least four concurrent medications. A pharmacist initially compiled a comprehensive list of all medications through patient interviews and medication reviews, and subsequently, identified and categorized potential DDIs using the Lexi-interact® and Micromedex® databases. The clinical pharmacist then evaluated the clinical impact of the identified DDIs in every individual patient and provided appropriate interventions to resolve them.

Results

A total of 200 patients met the inclusion criteria for the study, with 1281 DDIs identified across 337 distinct types. The majority of identified DDIs exhibited major severity (52.1%) and pharmacokinetic mechanisms (50.3%), with an unspeci- fied onset (79.4%) and fair evidence (67%). Of the identified DDIs, 81.1% were considered clinically significant, prompting 1059 pharmacotherapy interventions by the clinical pharmacist. Additionally, a significant relationship was observed between the number of drugs used during hospitalization and the occurrence of DDIs ($P < 0.001$, $r=0.633$).

Conclusion

DDIs are highly prevalent among hospitalized patients with hematologic malignancies, with their occurrence increasing alongside the number of medications administrated. The intervention of a clinical pharmacist is crucial to evaluate the clinical impact of these DDIs and implement effective interventions for their management.

Article Number: 111

The Analgesic And Anxiolytic Effects Of Melatonin In Acute And Chronic Pain: A Systematic Review

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Introduction
Melatonin, a neurohormone secreted mainly by the pineal gland, has been shown to have analgesic and anti-anxiety properties in acute and chronic pain conditions and is investigated in the present study. This systematic review examines the role of melatonin in pain modulation and anxiety reduction by evaluating a variety of clinical and preclinical studies in humans and animals.
Materials & Methods
A comprehensive search was performed in the databases Scopus, Web of Science, Google Scholar, PubMed and 1060 articles were obtained. After title screening and removal of duplicates, 561 articles remained. After evaluating the abstract and full text, 29 relevant studies were included.
Results
From the evaluation of the studies, it can be concluded that the analgesic effects of melatonin in acute pain conditions are by modulating inflammatory pathways and oxidative stress. However, when examined in chronic pain conditions, the effect of melatonin on sleep and pain scores shows transient and superficial treatments and the long-term efficacy of melatonin has not been concluded in the evaluated studies. Melatonin showed a plausible anti-anxiety effect in the reviewed studies and these effects were more visible in models of neuroinflammation and oxidative stress. However, there were also studies that reported standard anti-anxiety drugs with their advantages over melatonin.
Conclusion
It can be concluded that the analgesic and anti-anxiety effects of melatonin are significant in most studies and are mainly through anti-inflammatory, antioxidant and neuromodulatory mechanisms.
Article Number: 109

Successful Treatment Of PI3K Delta Syndrome (APDS) With Sirolimus: A Case Series Of Three Patients

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Introduction

Gain-of-function mutations in PIK3CD or PIK3R1 lead to activated PI3K Delta Syndrome (APDS), which causes immune system imbalance. Patients commonly present with repeated infections, abnormal lymphoid tissue growth, autoimmune complications, and an elevated risk of developing B-cell lymphomas. Overactivation of the PI3K-AKT-mTOR signaling pathway causes this disease. As an mTOR inhibitor, Sirolimus has demonstrated therapeutic benefit in reducing lymphoproliferation and controlling immune symptoms by targeting this dysregulated pathway.

Case Presentation

The first case is a 6-year-old girl born to consanguineous parents (first cousins) presenting with generalized lymphadenopathy, osteomyelitis, and autoimmune hemolytic anemia (AIHA). Her clinical history includes severe, treatment-resistant infections involving bacterial (Streptococcus pneumoniae, Staphylococcus aureus), fungal (Candida), and viral (EBV, CMV). Immunological tests revealed elevated IgM, decreased IgA, inverted CD4/CD8 ratio, and reduced naïve T cells. Genetic analysis identified a heterozygous PIK3CD c.3061G>A mutation, that is consistent with Activated PI3K-δ Syndrome (APDS). She is currently receiving IVIG, cotrimoxazole prophylaxis, and Sirolimus.

The second case is a 15-year-old boy born to unrelated parents, presenting with recurrent respiratory infections, chronic otitis media, Crohn's disease, lymphoproliferation , and delayed wound healing. His family history includes a 12-year-old deceased sibling with significant lymphadnopathy that was misdiagnosed as a Hodgkin lymphoma. He had a history of mild developmental delay and poor wound healing. Genetic test confirmed PIK3CD c.3061G>A mutation. His treatment includes Sirolimus, corticosteroids, and IVIG.

The third case is a 7-year-old girl also from non-consanguineous parents. Her history includes recurrent and resistant to treatment pneumonia and sinusitis, lymphadenopathy, and dental enamel hypoplasia. Immunologic tests revealed CD4+ lymphopenia, elevated IgM, and decreased IgA levels. Genetic tests confirmed a PIK3CD c.G2974A mutation. She is currently getting monthly IVIG, cotrimoxazole prophylaxis, and Sirolimus.

All 3 patients demonstrated significant improvement following the administration of Sirolimus and their disease achieved stable disease control after 2-3 years of treatment. Additionally, none of the patients experienced serious adverse effects related to the treatment. This report confirms effectiveness of Sirolimus in management of APDS.

Conclusion

This report confirms effectiveness of Sirolimus in management of APDS.

Article Number: 58

The Effect Of Dexmedetomidine On Inflammatory Factors And Clinical Outcomes In Patients With Septic Shock: A Randomized Clinical Trial

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Introduction
Dexmedetomidine is a sedative-analgesic widely used in sepsis. However, its effects on septic shock remain unclear.This study aims to investigate the impact of dexmedetomidine on inflammatory biomarkers in septic shock.
Materials & Methods
This study was a randomized controlled clinical trial. Patients who met the inclusion criteria were randomly assigned to either the dexmedetomidine (n = 24) or the morphine + midazolam group (n = 24). The primary outcome was changes in inflammatory factors, including IL-1, IL-6, TNF-α, ESR, and CRP. Serum levels of inflammatory factors were measured at baseline and the end of the intervention. Secondary outcomes included changes in the norepinephrine dose, vital signs, and SOFA scores.
Results
Of the 48 subjects, 52.08% were male. After intervention, levels of IL-1, IL-6, and TNF-α significantly differed between the two groups ($p = 0.011$, $p < 0.001$, and $p < 0.001$, respectively). Heart rate and systolic blood pressure decreased over time; however, there was no significant difference between the two groups (p-value > 0.05). Additionally, the two groups had no significant difference in norepinephrine dose or SOFA score (p-value > 0.05).
Conclusion
Sedation with dexmedetomidine can attenuate the inflammatory factors in septic shock. Also, dexmedetomidine did not worsen the hemodynamic parameters in septic shock patients.

Article Number: 187

Clinical Uses And Safety Concerns Of Tyrosine Kinase Inhibitors With A Focus On Novel Drugs: A Narrative Review

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Introduction
To review the safety issues surrounding tyrosine kinase inhibitors (TKIs), specifically, hematological adverse effects, cardiovascular issues, renal adverse effects and nephrotoxicity, endocrine system adverse effects, concerns related to the reproductive system, dermatological and gastrointestinal adverse effects.
Materials & Methods
A literature search was performed through Web of Science, PubMed, Google Scholar, Scopus, and the Food and Drug Administration.
Results
Most TKIs show hematological side effects. Considering cardiovascular toxicities, as opposed to imatinib which is relatively safe, new-generation TKIs may be associated with severe cardiovascular side effects. Both acute and chronic renal failure were reported with TKIs such as gefitinib, imatinib, pazopanib, sorafenib, and sunitinib. Many endocrine adverse effects have been reported including hypercholesterolemia and hypertriglyceridemia (with lorlatinib) and thyroid dysfunction (with dasatinib). TKIs may interfere with fetus implantation, growth, and gonadal development. Females receiving TKIs and encountering unwanted pregnancy may have a normal pregnancy, miscarriage or an abnormality in the fetus. Skin toxicity has been identified as the most debilitating adverse effect in patients receiving EGFR-TKI. Gastrointestinal side effects are common with TKIs. Diarrhea was the most frequently reported adverse effect of many TKIs
Conclusion
TKIs are increasingly taking up a critical role in the treatment of cancers due to their specific action toward malignant cells compared to conventional cytotoxic chemotherapy. Despite a dramatic improvement in the survival of patients with cancer following approval of TKIs, various early and late adverse effects were reported.
Article Number: 171

Evaluation of Ceftazidime/Avibactam Usage Pattern and Pharmacist Team Interventions in Nikan Sepid Hospital

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Introduction

Ceftazidime/avibactam is an expensive broad-spectrum β-lactam/β-lactamase inhibitor combination with significant activity against multidrug-resistant gram-negative bacteria, particularly carbapenem-resistant strains. Due to its critical role and limited indications, rational use is essential. Irrational usage of this mediceien is associated with a catastrophic burden on the health care systems including microbial resistance and economic issues. To evaluate the prescribing pattern of ceftazidime/avibactam and assess the impact of pharmacist interventions on optimizing its use at Nikan Sepid Hospital.

Materials & Methods

This descriptive-analytical study reviewed all ceftazidime/avibactam prescriptions over a six-month period. Data on indications, microbiology results, dosage adjustments based on renal function, duration of therapy, and physician acceptance of pharmacist interventions were collected. Guideline adherence and clinical outcomes were also analyzed.

Results

An internal guideline was developed by a multiciliary team which consist of pharmacist and infectious diseases specialist based on the national guideline. All orders were reviewed by the clinical pharmacist in a restriction manner. During the study period (2024-2025) only 24 patients were eligible to receive the ceftazidime/avibactam based on the clinical conditions and microbiological culture results. Also 32 requests were rejected according to the clinical pharmacist consultation and this led to 500 vials consumption reduction (about 2000000000 tomans). All patients infected by the multidrug resistance klebsiella. In 42% of cases, dose adjustment based on renal function was necessary and performed by the clinical pharmacist and the intervention acceptance rate among physicians was 89%. All patients received this medicine up to six days only. All processes were done by online stewardship program and with cooperation between pharmacist and infections disease specialist.

Conclusion

Clinical pharmacist interventions significantly contributed to optimizing ceftazidime/avibactam use and improving patient outcomes. Establishing internal protocols and strengthening the role of clinical pharmacists are recommended to ensure rational use of this critical antibiotic.

Article Number: 237

Dengue Fever in the Modern Era: A Comprehensive Review of Pathogenesis, Clinical Expansion, and Emerging Control Strategies

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Introduction

Dengue fever is a growing threat in tropical and subtropical regions, driven by climate change and urbanization. Caused by DENV with four serotypes, it can lead to severe disease via antibody-dependent enhancement. This review covers dengue's pathogenesis, expanding clinical forms, and recent advances in diagnosis, prevention, and vector control.

Materials & Methods

A systematic review was conducted following PRISMA guidelines, using PubMed, Scopus, and Google Scholar (2015–2024). Keywords included dengue pathogenesis, severe dengue, and vector control. Of 1,203 articles screened, 178 met inclusion criteria, focusing on epidemiology, immunopathology, diagnostics, and therapies. High-quality meta-analyses and PROSPERO-registered reviews were prioritized.

Results

The global impact of dengue fever is significant, with a sharp rise in incidence. In 2019, a staggering 56.7 million cases were reported, 60% of which were in Southeast Asia. The disease is not confined to a single region, as outbreaks in Africa and the Americas are also on the rise. These increases are driven by climate variability and urban expansion. The World Health Organization categorizes dengue fever into three types: dengue without warning signs, dengue with warning signs, and severe dengue. Severe dengue is characterized by plasma leakage, hemorrhage, and organ dysfunction, which can lead to hypovolemic shock, liver failure, or encephalopathy.Expanded dengue syndrome, a recently recognized form, includes neurological, hepatic, and ocular complications. Vigilance in monitoring disease severity is crucial, as early diagnosis relies on NS1 antigen detection, RT-PCR, and IgM/IgG serology. Biomarkers such as thrombocytopenia, hypoalbuminemia, and elevated liver enzymes are associated with disease severity, underscoring the need for cautious and attentive care. As no specific antiviral treatment exists, the audience's role in providing supportive care remains integral to the management of dengue. In severe cases, ICU-level care includes close hemodynamic monitoring, judicious fluid replacement guided by hematocrit and urine output, correction of electrolyte imbalances, and managing bleeding with platelet or plasma transfusions if indicated. Vasopressors may be required in cases of refractory shock, and organ support is considered in cases of multi-organ involvement. NSAIDs are contraindicated due to bleeding risk. Dengvaxia® is approved only for seropositive individuals aged 9–16 in endemic regions to reduce the risk of antibody-dependent enhancement.

Conclusion

Dengue fever remains a serious global health issue. Key priorities include early diagnosis, supportive care, and broader vaccine access. Addressing insecticide resistance, climate change, and the lack of antivirals requires continued research and global collaboration to reduce the disease's burden and severity.

Article Number: 56

Prescription Pattern, Medication Adherence and Quality of Life Associated with Antihypertensive Drugs in Geriatrics, Dr. B. R. Ambedkar Medical College and Hospital, Bangalore, India

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Introduction
The study was designed to evaluate prescribing pattern, Medication Adherence and Quality of life associated with antihypertensive drugs in Geriatric patients in Dr. B. R. Ambedkar Medical College and Hospital, Bangalore, India.
Materials & Methods
A prospective and observational study was carried out for 6 months in Dr. B. R. Ambedkar Medical College and Hospital. A total of 120 patients were involved in the study. Prescribing pattern was evaluated by referring to patient case files comparing with JNC 7 guidelines. Patients medication adherence level was assessed by using Morisky medication adherence scale and quality of life by using MINICHAL questionnaire. After collection of complete data, appropriate descriptive and inferential statistical analysis was performed.
Results
A Total of 120 patients were enrolled in the study both from in-patient and outpatient department. The commonly prescribed drug in both the department is CCB's as single dug therapy, CCB's account for 43.90 in In-Patient department, 66.66% in Out-patient department. Under combination therapy ARB + Diuretics was commonly prescribed 69.23% in In-patient & 70.74% in Out-patient department. Majority of the study population were having good quality of life and having high level of medication adherence towards the therapy.
Conclusion
The most preferred prescribing therapy in both in-patient and out-patient was single drug therapy. Calcium Channel Blockers were the most frequently prescribed class of drugs in single drug therapy, Angiotensin Receptors blockers with Diuretics were the most commonly prescribed class of drugs in in-patient department and in out-patient department also Angiotensin Receptors blockers with Diuretics are the frequently prescribed combination of drugs. Majority of the study population were having the high level of adherence towards the anti-hypertensive therapy, which means they are in good compliance with the treatment and showed that many of the patients are having the good quality of life, we used MINIHCAL questionnaire to assess the quality of life of patients. Pharmacists situated as the most available health care providers in the community, could improve patient's information and adherence to the administration of BP.

Article Number: 98

Severe Neurotoxicity due to Atropa belladonna Poisoning: A Case Report and Literature Review

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Introduction

Atropa belladonna (A. belladonna), commonly known as deadly nightshade, is a poisonous plant belonging to the Solanaceae family. The toxic effects of A. belladonna are attributable to its alkaloid content, which possesses potent anticholinergic properties. These alkaloids are responsible for the plant's toxicity and can cause a range of adverse effects in humans and animals upon ingestion or contact.

Case presentation

In this report, we describe two atypical cases of A. belladonna poisoning resulting from accidental ingestion of the plant's raw leaves, which were referred to the emergency room of a poisoning center in northern Iran. Both patients presented with symptoms of anticholinergic toxicity, including dry mouth, mydriasis, tachycardia, and delirium. The patients were managed conservatively with supportive measures, including hydration and administration of benzodiazepines to control agitation and delirium. With appropriate treatment, both patients showed improvement and were discharged from the hospital. A. belladonna intoxication is associated with a range of clinical manifestations, primarily due to its neurotoxic effects. These manifestations may include flushing, mydriasis, tachycardia, ataxia, agitation, delirium, and urinary retention. The severity of symptoms can vary depending on the amount of the toxin ingested and the individual's susceptibility. In severe cases, A. belladonna toxicity can lead to seizures, coma, and even death.

Conclusion

These cases highlight the importance of awareness regarding the potential toxicity of A. belladonna and the necessity of prompt and appropriate management of its toxicity. In severe cases, physostigmine may be considered for the treatment of neurological symptoms due to the plant's anticholinergic effects.

Article Number: 178

Development of an Evidence-based Clinical Protocol for the Management of Non-chemotherapy Drug Extravasation Using Delphi Model

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Introduction
Extravasation happens when a medication unintentionally leaks from a vein during IV administration, complicating treatment, increasing healthcare costs, and reducing patient compliance. Although chemotherapy drugs are more often associated with extravasation, non-chemotherapy medications like lorazepam and doxycycline can also cause severe complications, yet are often overlooked in studies. Despite these risks, no standardized protocols exist for non-chemotherapy drug extravasation, creating a significant gap in clinical practice. Establishing clear protocol is crucial to improve prevention and treatment. This study aims to address this gap by providing an evidence-based approach to managing extravasation. The protocol covers causes and symptoms, risk factors, preventive strategies, management, and best practices for IV administration.
Materials & Methods
This protocol was developed based on clinical evidence, expert consensus, and the Delphi method. To ensure the inclusion of accurate and reliable studies, an extensive search was conducted across scientific databases. Studies were first screened based on their titles, then reviewed in detail to identify relevant sources. Given the selection of the Delphi method for this aim, a dedicated team was formed to oversee its implementation. Additionally, a panel of experts including a clinical pharmacy specialist, two vascular surgeons, and nurses specialized in extravasation management was established to contribute to the process. In the initial phase, a literature search was performed based on available clinical evidence, leading to the development of a preliminary draft of the protocol. This draft underwent a written review by the dedicated team before being distributed to panel members. Following feedback from the first review including linguistic refinements, modifications to treatment process details, and an emphasis on prevention as a primary strategy a revised version was prepared and redistributed to the panel members for further evaluation. Following three rounds of review and revision, the final version was agreed upon by the expert panel and will be compiled as the protocol.
Results
Most studies conducted to date on extravasation have primarily focused on chemotherapeutic agents. Research on non-chemotherapy drugs is limited and unorganized, with no protocol to manage of extravasation from these drugs. Although some non-chemotherapy agents can also lead to extravasation and serious complications, this study represents the first of its kind. While prevention is preferred, most studies have been limited to a series of steps, and often overlook catheter selection for high-risk patients. This protocol offers guidance on catheter choice based on patient condition and classifies drugs by extravasation risk to raise staff awareness.This study examined key injury management strategies, including stopping infusion, drug aspiration, antidote, and conservative management. Despite limited data in how to manage, and how to classify extravasation based on the risk of harm in non-chemotherapy drugs, the Delphi panel attempted to address gaps in protocol development.
Conclusion
In this protocol drugs are classified into three groups based on risk (e.g., low risk: aminophylline; intermediate risk: ondansetron; high risk: doxycycline). Beyond conventional preventive methods, measures emphasize selecting an optimal catheter based on infusion duration, drug type, and patient condition. Options include peripheral IV, implantable port, peripherally inserted central catheters, etc. (PICC preferred for prolonged infusions). In this protocol, advanced detectors (impedance, temperature, ultrasound, skin pressure and etc.) have been introduced for rapid diagnosis.
The protocol also includes a concise table categorizing the recommended treatments for each drug. In addition to the pharmacological management section, which includes the preparation and administration of common antidotes, non-pharmacological recommendations are also described. A separate chapter is dedicated to investigational treatments recommended due to limited evidence from current studies.
Article Number: 45

Therapeutic Effects of Herbal Products Containing Thymol in Vulvovaginal Candidiasis: A Review on Clinical Trials

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Introduction
Vulvuvaginal candidiasis (VVC) a common fungal infection caused by Candida species, particularly Candida albicans, and also by non-albicans species such as Candida glabrata, affecting the vagina and vulva. This infection affects approximately 75% of women worldwide, with 40–50% experiencing recurrence. According to studies done in Iran, 41.3% of women have experienced vaginal infections, and candida is the most common cause of vaginitis (47.4%). Rising antifungal resistance and limitations of conventional therapies like azoles have spurred interest in alternatives such as herbal medicine and natural products. This study is a review of clinical trial data and mechanistic studies to evaluate the efficacy, safety and potential of herbal products containing thymol for the management of VVC.
Materials & Methods
The search has been conducted using various databases such as PubMed, Scopus, and google scholar; only those articles that met our criteria were finally included in our study.
Results
Thymol, found in medicinal plants like Zataria multiflora, Thymus vulgaris, Satureja khuzestanica, Trachyspermum ammi, and Origanum vulgare, has been evaluated in several clinical trials for its efficacy in treating VVC. Clinical studies on Zataria multiflora-based formulations demonstrated significant reduction in Candida colony counts and clinical symptoms such as itching, discharge, and erythema, with efficacy comparable to conventional antifungals like clotrimazole. A randomized trial involving S. khuzestanica also showed notable symptom improvement and mycological cure rates. Trials utilizing T. vulgaris and T. ammi indicated their effectiveness as adjunct or alternative treatments, reducing recurrence and enhancing patient-reported outcomes. Overall, Thymol-containing herbal products showed promise as effective and well-tolerated options in the management of VVC.
Conclusion
Evidence from randomized controlled trials (RCTs) shows thymol-based formulations achieve comparable or superior outcomes to standard antifungals, with minimal adverse effects. Thymol's multi-target actions—disrupting fungal membranes, inhibiting biofilms, modulating ergosterol biosynthesis, and enhancing immune responses—position it as a promising option, particularly for azole-resistant cases. Challenges such as standardization and pharmacokinetics remain, necessitating further research.
Article Number: 172

Identification of the Most Cost-Saving Disease-Modifying Therapies and Factors Affecting the Budget in the Pharmacotherapy of Multiple Sclerosis: A Systematic Review

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Introduction

Multiple sclerosis (MS) is a chronic, immune-mediated neurological disorder that imposes substantial clinical and economic burdens worldwide. The disease leads to progressive disability, significantly impacting patients' quality of life and creating a high demand for long-term, effective, and economically viable treatment strategies. Disease-modifying therapies (DMTs) are pivotal in managing MS by reducing relapse frequency and slowing disease progression. However, the financial implications of their sustained use pose challenges for healthcare systems. This systematic review aimed to evaluate the budget impact of different DMTs used in MS treatment and to identify the key factors driving cost variations. By synthesizing evidence from multiple budget impact analyses (BIAs), our objective was to inform policymakers and healthcare providers about the most cost-saving options to facilitate optimal resource allocation without compromising clinical outcomes.

Materials & Methods

A comprehensive systematic search was conducted in databases such as PubMed, Scopus, Web of Science, Embase, and Google Scholar to identify BIAs and economic evaluations of DMTs in MS. Studies were included if they evaluated the budget impact of DMTs as a primary or secondary outcome and reported detailed model inputs and assumptions. No language restrictions were applied; non-English studies were translated by experts. Two independent reviewers screened titles, abstracts, and full texts, and disagreements were resolved by consensus, with the process documented using a PRISMA flow diagram. Data extraction focused on key study characteristics, including the MS population targeted, types of DMTs evaluated (e.g., β interferons, glatiramer acetate, natalizumab, fingolimod, and newer agents such as teriflunomide and alemtuzumab), economic perspectives, time horizons, and discounting practices. Quality assessment was performed using a 32-item checklist based on ISPOR guidelines, ensuring methodological rigor and transparency.

Results

From 1,865 records initially identified, 22 studies met the inclusion criteria. The selected budget impact analyses (BIAs), conducted from 2008 to 2021 and published between 2009 and 2023, represented diverse regions including Europe, North America, Latin America, and Asia. Overall, studies achieved a mean quality compliance score of 84.4%, reflecting strong reporting practices. Despite differences in model assumptions and time horizons, glatiramer acetate consistently emerged as the most cost-saving disease-modifying therapy, due to its stable pricing and favorable coststructure compared to options such as β-interferons and natalizumab. Key cost drivers included the administration route, expenses for managing adverse events, and the integration of biosimilars. Sensitivity analyses demonstrated that minor variations in these parameters could significantly alter financial outcomes, emphasizing the need for context-specific data in economic evaluations.

Conclusion

The evidence synthesized in this review supports the prioritization of cost-effective DMTs, with glatiramer acetate demonstrating a significant potential to reduce healthcare expenditures while maintaining therapeutic efficacy in MS management. Variability in economic outcomes across studies emphasizes the need for careful consideration of administration routes, adverse event management, and biosimilar adoption. Future research should refine these economic models with more granular, real-world data to ensure. that budget impact evaluations remain relevant in evolving treatment landscapes. Integrating such robust economic assessments into clinical decision-making processes is essential for achieving a sustainable balance between clinical benefit and financial viability in the long-term management of MS.

Article Number: 39

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Efficacy and Tolerability of Adjunctive Metformin Therapy in Children and Adolescents with Type 1 Diabetes: A Randomized, Blinded, Placebo-Controlled Clinical Trial

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Introduction

Type 1 diabetes mellitus (T1DM) is a chronic autoimmune disease characterized by pancreatic β-cell destruction, leading to chronic hyperglycemia. The incidence of T1DM is increasing globally, particularly among children and adolescents. Despite advancements in insulin regimens and monitoring systems, achieving optimal glycemic control remains a challenge. Poor control increases the risk of long-term micro-vascular and macro-vascular complications. Metformin, an insulin-sensitizing agent, has been explored as an adjunct to insulin therapy in T1DM, with potential benefits for glycemic control, vascular function, and metabolic parameters. Yet, findings in pediatric populations have been mixed and warrant further investigation. This study aimed to evaluate the efficacy and tolerability of adjunctive metformin in improving endothelial function, glycemic markers, and metabolic outcomes in pediatric patients with T1DM over a six-month period.

Materials & Methods

This is blinded, randomized, controlled add-on trial was conducted from 2023 to 2024 at Mofid Children's Hospital in Tehran, Iran. Participants were children and adolescents aged 8–21 years with a confirmed diagnosis of T1DM according to American diabetes association criteria and at least five years of disease duration. Eligibility required a BMI-for-age (Z-score) between the 5th and 85th percentiles which were on the treatment with insulin. Exclusion criteria included prior metformin use within the past year, episodes of severe hypoglycemia or diabetic ketoacidosis in the past six months, pregnancy or lactation, other endocrine disorders, or use of medications affecting glucose or lipid metabolism. Block randomization was utilized. Participants, investigators and analyst were blinded to group allocation. Weekly phone calls were conducted to monitor drug tolerance and adherence, and any side effects were recorded throughout the study period. Physical examinations, including anthropometric measurements (BMI and waist-to-hip ratio) and blood pressure, were performed at baseline, 3 months, and 6 months. As the primary outcome, endothelial function was evaluated using ultrasound-based flow-mediated dilation (FMD) of the brachial artery, calculated as the percentage changes in arterial diameter following reactive hyperemia. Daily insulin dose was documented at each time point. Laboratory assessments included fasting blood glucose (FBS), glycated hemoglobin (HbA1c), lipid profile, blood urea nitrogen, serum creatinine, hemoglobin, mean corpuscular volume, and vitamin B-12 levels. Participants were randomly assigned in a 1:1 ratio to receive either metformin (500 mg twice daily) or a matched placebo for six months. The study protocol was approved by the ethics committee and was registered at the Iranian Registry of Clinical Trials. The study was conducted in accordance with the declaration of Helsinki and good clinical practice guidelines.

Results

Of the 52 randomized participants, 44 completed the study. There were no significant baseline differences between the metformin and placebo groups. After six months, total cholesterol significantly decreased in the metformin group compared to placebo ($p = 0.035$). Adverse events, including mild gastrointestinal symptoms and hypoglycemia, occurred more frequently in the metformin group. No significant differences were observed between groups for HbA1c ($p = 0.453$), FBS ($p = 0.600$), daily insulin dose ($p = 0.195$), or endothelial function (FMD; $p = 0.247$). Changes in LDL-C, TG, HDL-C, and blood pressure were not statistically significant.

Conclusion

Adjunctive metformin therapy in adolescents with T1DM led to a statistically significant reduction in total cholesterol levels after six months and was associated with a higher frequency of hypoglycemia and gastrointestinal adverse effects compared to placebo. No significant improvements were observed in HbA1c, FBS, insulin requirements, FMD, or blood pressure. These findings indicate that while metformin may improve lipid profiles, it does not confer meaningful benefits on glycemic control or vascular function in this population. Nevertheless, the favorable lipid response and acceptable tolerability profile suggest that metformin could offer selective cardiometabolic advantages when used adjunctively, particularly in patients with dyslipidemia. Further large-scale and longer-term studies are warranted to better define its role in T1DM management.

Article Number: 81

Investigation of Predictive Factors for Mortality in COVID-19 Patients Admitted to the Intensive Care Units of Sina Hospital

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Introduction

In December 2019, a new virus from the coronavirus family named SARS-CoV-2 emerged and led to a pandemic in the world, and as a result, much pressure was put on the health systems. Some patients with COVID experience more severe complications such as acute respiratory failure and multi-organ failure, which will be associated with increased mortality. This study was conducted to identify the key factors related to the mortality of COVID-19 patients admitted to the ICU of Sina Hospital. It used laboratory data and vital signs of these patients and investigated the relationship between them to help improve treatment strategies.

Materials & Methods

This retrospective study was conducted on all patients over 18 years of age diagnosed with COVID-19 who were admitted to the critical care department of Sina Hospital in Tehran from March 2019 to December 2022. Laboratory data, reports of vital signs and the course of the disease, and all patient information including age, sex, underlying diseases, medications, and in-hospital course, including length of hospitalization, in-hospital mortality, and the need for mechanical ventilation, are extracted and recorded from the files. became. Then, the correlation of factors predicting mortality in patients with COVID-19 hospitalized in the ICU was investigated.

Results

In our regression analysis, five variables were identified that are significantly able to predict mortality in patients with COVID-19 hospitalized in the ICU. These predictors include length of stay in the department before admission to the intensive care unit, patient age, neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR), and the dose of dexamethasone received per day of hospitalization in the intensive care unit during treatments. These findings are consistent with existing findings and provide valuable information in the management of severe cases of Covid-19.

Conclusion

Our study adds to the body of evidence on predictors of mortality in patients with COVID-19 admitted to the ICU. The identification of age, NLR, PLR, length of stay in the ward before admission to intensive care, and dose of dexamethasone received per day of stay in the intensive care unit as significant predictors emphasize the complex interplay of factors influencing outcomes.

Article Number: 186

Knowledge, Attitude, and Practice of Nurses Regarding Medication Administration via Enteral Feeding Tubes: A Cross-sectional Study

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Introduction

Administering medications through enteral feeding tubes (EFTs) is a routine yet complex nursing task that requires appropriate knowledge and practice to avoid complications such as drug-nutrient interactions, tube obstruction, and reduced drug efficacy. This study aimed to evaluate the knowledge, attitude, and practice (KAP) of nurses regarding safe medication administration via EFTs in a hospital in Iran.

Materials & Methods

The present study is a descriptive and analytical cross-sectional study conducted from February 2024 to September 2024. An information gathering form comprising two main sections: a) socio-demographic and professional information of the physicians, and b) questions/items designed to assess the knowledge, attitude, and practice of physicians regarding the study topic, was applied. The validity of the initially designed questionnaire was assessed using the Content Validity Ratio (CVR) and Content Validity Index (CVI), and its reliability was assessed using the Kuder-Richardson coefficient and Cronbach's alpha. The questionnaire was then standardized. For items to remain in the questionnaire, all of them should have a CVR above 0.75 and a CVI above 0.79, and the Richardson Coefficient and Cronbach's Alpha had to be above 0.70. Completion of the forms was carried out by visiting the physicians in person.

Results

Overall, 170 information gathering forms were delivered to physicians, of which 102 completed forms were received by the researcher. The gender distribution of the physicians included 62 females (60.78%) with a mean±sd age of 42.76±7.83 years and 40 males (39.22%) with a mean±sd age of 48.57±10.10 years. The knowledge score of the physicians participating in the study was 4.93±1.51 (out of 9), the attitude score was 24.83±4.84 (out of 32), and the total practice score was 15.42±6.58 (out of 24). A weak direct correlation was observed between knowledge and attitude ($p = 0.05$) and between attitude and practice ($p<0.001$). Furthermore, there was a significant direct relationship between attitude and being a faculty member ($p=0.011$), and between practice and work experience ($p=0.05$). 71% of the physicians identified pharmacists as qualified specialists for providing clean room services.

Conclusion

The study reveals that nurses exhibit strong positive attitudes and moderate-to-good knowledge and practice regarding medication administration through EFTs. However, a notable gap exists between knowledge and actual practice. For instance, while most participants knew the correct procedures, not all consistently applied them such as interrupting feeding for fasting-required drugs or flushing tubes appropriately. This indicates that knowledge alone may not guarantee optimal practice, and underscores the need for ongoing practical training, supervision, and institutional protocols to bridge this knowledge practice gap.

Article Number: 233

High-Dose Vitamin C Supplementation in Patients Undergoing Allogeneic Hematopoietic Stem Cell Transplantation: A Pilot Randomized, Triple-Blind, Placebo-Controlled Trial

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Introduction

Allogenic hematopoietic stem cell transplantation (allo-HSCT) is a curative treatment for hematological disorders but often results in micronutrients deficiency and complications. Vitamin C, a potent antioxidant, may improve endothelial function, tissue protection, and immune recovery. This study evaluated the effects of early high-dose vitamin C supplementation on plasma vitamin C levels and post-HSCT complications.

Materials & Methods

In this pilot, triple-blind, placebo-controlled trial, 31 adult allo-HSCT patients were randomized to receive intravenous vitamin C (50 mg/kg/day) or placebo from day +1 to +14, followed by oral vitamin C (500 mg/day) or placebo until day +100. Plasma vitamin C levels were measured at days 0, +7, +15, and discharge. The primary outcome of this study was to assess the effect of high-dose vitamin C on vitamin C plasma levels. Secondary endpoints included evaluating the impact of vitamin C on additional outcomes and complications associated with HSCT, such as engraftment, the incidence and severity of aGvHD, OM, infectious complications, hospital stay duration, and early relapse. Patients were monitored for post-HSCT complications until day +100.

Results

Plasma vitamin C levels were significantly higher in the vitamin C group at all time points ($P<0.001$). Trends toward reduced acute graft-versus-host disease (33% vs. 44%), lower oral mucositis severity (46.6% vs. 62.5%), and shorter duration (7.5 ± 3.6 vs. 9.1 ± 3.7 days) were observed, though not statistically significant. No significant adverse events were reported.

Conclusion

High-dose vitamin C effectively corrected plasma levels, and while trends toward reduced complications were observed in allo-HSCT patients, larger trials are needed to confirm these findings.

Article Number: 35

Novel Drug Design for Treatment of Covid-19: A Systematic Review of Preclinical Studies

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Introduction

Since the beginning of the novel Coronavirus (SARS-CoV-2) disease outbreak, there has been an increasing interest in finding a potential therapeutic agent for the disease. In this regard, we conducted a systematic review to provide an overview of studies that have conducted for drug development (In silico, In vitro, In vivo) in covid-19.

Materials & Methods

A systematic search was carried out in major database including, PubMed, web of science, Scopus, EMBASE and Google Scholar. Combinations of the following search terms was used: Corona virus, Covid-19, SARS-CoV-2, drug design, drug development, In silico, In vitro and In vivo. A narrative synthesis was performed as a qualitative method for the data synthesis of each outcome measure.

Results

A total of 2168 articles was identified through searching databases. Finally, 315 studies (266 In silico, 34 In vitro and 15 In vivo) were included. In studies with in silico approach, 98 article study repurposed drug and 91 study evaluated herbal medicine on Covid-19. Among the 260 drugs repurposed by computational method, best results were observed with saquinavir (n=9), ritonavir (n=8) and lopinavir (n=6). Main protease (n=154) following Spike glycoprotein (n=62) and other nonstructural protein of virus (n=45) were among the most studied targets. Doxycycline, chlorpromazine, azithromycin, heparin, bepridil and glycyrrhizic acid show both in silico and in vitro inhibitory effect against SARS-CoV-2.

Conclusion

The preclinical studies of novel drug design for Covid-19 focused on main protease and spike glycoprotein as targets for antiviral development. From evaluated structures, saquinavir, ritonavir, eucalyptus, tinospora cordifolia, aloe, green tea, curcumin, pyrazole and triazole derivatives in in silico studies, and doxycycline, chlorpromazine, heparin from in vitro and human monoclonal antibodies from in vivo studies showed promised results regarding efficacy. It seems that due to the nature of the Covid-19 disease, finding some drugs with multi-target antiviral actions and anti-inflammatory potential is valuable and some herbal medicines have this potential.

Article Number: 173

In Situ Hydrogels: Promising Strategy for Ocular Drug Delivery

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Introduction
Ocular drug delivery faces significant challenges, such as low ocular bioavailability and short retention time, which lead to inadequate concentration for complete treatment, especially in retinal diseases. These challenges arise due to the complex anatomical and physiological barriers of the eye, including the conjunctiva, cornea, and tear turnover. Therefore, there is a critical need to develop more effective drug delivery systems to address these challenges. This study aims to analyze and summarize recent advancements in the field of ocular drug delivery, focusing on in-situ hydrogel-based formulations as novel ocular drug delivery system.
Materials & Methods
Relevant articles were gathered by conducting searches in databases through appropriate keywords which followed by data extraction and analysis.
Results
Hydrogel-based drug delivery systems have shown promising results in enhancing ocular drug delivery, including prolonged retention time, improved bioavailability, and reduced dosing frequency. Thermo-responsive hydrogels gel at physiological temperatures, enabling sustained release in anterior/posterior segments, while ion-activated hydrogels crosslink via tear-fluid electrolytes, enhancing precorneal retention. These systems have been explored for treating neovascularization (via anti-VEGF delivery) and glaucoma (via timolol encapsulation), demonstrating targeted therapeutic efficacy with minimal irritation. Their biocompatibility and biodegradability further support long-term ocular applications.
Conclusion
In conclusion, the limitations of the traditional dosage forms in treating ocular diseases can be effectively addressed by utilizing novel hydrogel ocular drug deliveries. The growing number of hydrogel-based ocular products on the market and in clinical trials demonstrates the potential of these systems to revolutionize ocular drug delivery.
Article Number: 80

Efficacy of Adding Oral N Acetyl Cysteine Supplement to The Cystic Fibrosis Treatment Regimen: A Randomized Quasi-Experimental Trial

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Introduction

Cystic fibrosis (CF) is known as a worldwide problem that can cause death in young patients. This is an autosomal recessive disease, recognized as the most common hereditary disease that shortens the life span in Caucasians. To prevent pulmonary progression of the disease, respiratory therapy is initiated immediately after diagnosis. In cystic fibrosis, it is recommended to use supplements and N-acetylcysteine (NAC) as a source of glutathione, and they can help to maintain the oxidant-antioxidant balance in the body of these patients. However, there is no complete certainty regarding the positive effect of NAC on lung function. This study investigated the efficacy of adding the oral NAC supplement to the CF treatment regimen compared to adding placebo. The quality of life and respiratory indicators of patients aged 6 to 18 years with mild to moderate pulmonary involvement were studied.

Materials & Methods

This study was a randomized, quasi-experimental, pilot, placebo-controlled clinical trial conducted over six months with 38 cystic fibrosis patients at the University Children's Hospital affiliated with Isfahan University of Medical Sciences. The study adhered to ethical principles and received approval (ID: IR.MUI.MED.REC.1400.218, approval date: 2021-06-20), with the Iranian Registry of Clinical Trials code IRCT20090808002306N7.

Sample collection occurred from fall 2021 to summer 2022 at the Cystic Fibrosis Clinic of Imam Hossein Hospital. Inclusion criteria included a sweat test chlorine level of ≥60 milliequivalents/liter, two CF diagnostic mutations, at least one stable clinical symptom, ages 6-18 years, FEV1 level >50%, mild to moderate illness, no acute respiratory infections, and no history of cardiovascular or renal diseases. Exclusion criteria included unwillingness to continue treatment, sensitivity to NAC, non-compliance with medication, recent corticosteroid use, and inability to swallow pills.

Data collection used a convenience method. Participants were randomized based on their birth dates into two groups: 20 in the control group and 18 in the case group. The case group received oral NAC (200 mg every eight hours) for three months, while the control group received a placebo. Medication adherence was monitored through pill counting.

The study utilized 200 mg NAC tablets (Mucosolvin®) and assessed quality of life using the CFQ-R, which measures scores from 0 to 100, where higher scores indicate better quality of life. Statistical analysis was performed using SPSS version 26.

Results

In this study, 113 cystic fibrosis patients were recruited from Imam Hossein Hospital in Isfahan. A total of 52 patients were evaluated based on the inclusion and exclusion criteria, with 25 receiving NAC and 27 taking a placebo. Ultimately, 38 patients completed the study (18 received NAC, 20 received placebo).

Complications observed included productive cough in seven NAC patients, dry cough in eight, and one patient experienced both types. One patient reported a severe headache, while another complained of a bitter taste and vomiting after taking NAC. Statistical analysis indicated no significant differences between the groups. In the placebo group, the mean of FEF 25-75 and the median of FEV1/FVC and CFQ-R scores showed no remarkable changes. In the NAC group, the median CFQ-R score improved, but no notable changes were observed in FEV1/FVC, FEV1, or FEF 25-75. Comparisons of FVC means between groups also showed no variation.

Conclusion

According to the results presented in this study, FEV1, FVC, FEV1/FVC, FEF25-75, and the quality of life of the case group were not significantly different in the same groups, and no major differences were observed between this medicine and placebo. Studying NAC compared with a placebo in a different age range group (e.g. 7 to 15), using another formulation for this study that has easier swallowing (like effervesant tablets), Investigating the effect of pollution on CF patients and living in a populated city compared with a village are suggestions that may alter results of NAC administration in CF patients.

Article Number: 12

Comparative Effectiveness and Clinical Outcomes of Corticosteroids, Vasopressin, and Epinephrine interventions alone or in Combination for Cardiac Arrest: A Systematic Review and Network Meta-analysis of Clinical Controlled Trials

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Introduction

Introduction: Several drug treatments have been attempted to improve the chances of survival and achieve the return of spontaneous circulation (ROSC) in cardiac arrest (CA) patients. The exact role of these medications is still unclear in CA.

Materials & Methods

An electronic search of databases was conducted from inception to October 2, 2022. Randomized clinical trials (RCTs) that evaluated the use of steroids, epinephrine, vasopressin in CA patients were included. Of 3,453 studies initially identified, 33 randomized clinical trials met the criteria for further analysis. The main clinical outcomes of the study were ROSC, survival to hospital admission, 24-hour survival after cardiopulmonary resuscitation (CPR), survival to hospital discharge. The network meta-analysis was performed on the population of human adults suffering from in hospital or out of hospital CA, ROSC, and receiving at least one of the following interventions: steroids, standard or high dose of epinephrine, vasopressin, alone or in pairs or triple combination (VSE) during CPR.

Results

Results: This study was performed on 21,000 CA patients from 33 RCTs which had our inclusion criteria. Results indicated that double combination of EP and steroids and triple combination VSE therapy had the highest probability of being ranked as best. Ranking analysis robustly recommended that double combination of EP with glucocorticoids with or without VP can improve the ultimate clinical outcomes of patients with cardiac arrest.

Conclusion

Conclusion: Our results suggested that double combination of epinephrine and steroids and triple combination of vasopressin, steroids and epinephrine were the most effective intervention for patients experiencing cardiac arrest.

Article Number: 221

The Effect of Nanocurcumin Formulation in Preventing Cisplatin-Induced Nephrotoxicity in **Cancer Patients**

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Introduction

Nephrotoxicity is one of the most important complications in cancer patients under treatment with cisplatin containing regimens. Curcumin, as the most important active component of Curcuma longa, is an antioxidant and anti-inflammatory compound. In this clinical trial, we assessed the preventive effect of nanocurcumin oral formulation against cisplatin-induced nephrotoxicity in cancer patients.

Materials & Methods

In this triple-blind clinical trial 30 cancer patients on cisplatin were randomly included in the treatment group, receiving nanocurcumin 40 mg capsules (n = 15) or the placebo group (n = 15) twice a day during four chemotherapy courses. Kidney function was measured at the beginning of the study and then at the end of each course of chemotherapy.

Results

There was no significant difference in acute kidney injury occurrence rate and creatinine and blood urine nitrogen serum levels between the treatment and placebo groups at the end of each chemotherapy course (P value >0.05). Just at the end of the first course, the difference was close to significant (P = 0.055). We also found no difference in mortality and recurrence rate in an average 30-month follow-up.

Conclusion

The results of this study indicate that oral nanocurcumin formulation at a dose of 40 mg twice daily has no significant effect on the prevention of cisplatin-induced renal toxicity compared to the placebo group. Additional well-designed clinical studies with larger sample sizes would be necessary for more accurate judgment.

Article Number: 13

The Role of Clinical Pharmacists in Mitigating Drug-Induced QTc Prolongation: A Cross-Sectional Study

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Introduction

Drug-induced QTc prolongation represents the predominant cause of acquired long QTc syndrome. Pharmacists' intervention, through the screening of at-risk patients and the provision of recommendations to prescribers for modifying drug regimens, may mitigate the adverse outcomes associated with this condition. This cross-sectional study aimed to evaluate the role of clinical pharmacists in reducing drug-induced acquired long QTc syndrome and mitigating the risk of progression toward life-threatening arrhythmias.

Materials & Methods

We included hospitalized patients who were receiving at least two concomitant QT-prolonging medications, or one QT-prolonging medication along with a diagnosis of heart failure, myocardial infarction, or sepsis in the study over three months. Using the Tisdale risk score, we provided recommendations to the prescribing physician, and acceptance rates were recorded. Additionally, the rate of QTc prolongation was assessed in the patients.

Results

The study was completed with 90 patients. The concomitant use of ondansetron and methadone was identified as the most common high-risk drug combination. A total of 56 pharmacist recommendations were made, with an estimated physician acceptance rate of 89%. Additionally, normalization of the QTc interval was observed in 14 out of 22 patients (63.6%) following pharmacists' intervention.

Conclusion

Clinical pharmacists are instrumental in the prevention of drug-induced long QTc syndrome among hospitalized patients.

Article Number: 84

Investigating the Prevalence of Drug Related Problems and Management Strategies in Patients Discharged from the Cardiology Department of Imam Hossein Hospital

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Introduction
Drug Related Problems (DRPs) are among the significant challenges in the management of cardiac patients, especially upon discharge from the hospital. These problems include drug interactions, incorrect prescriptions, inappropriate dosages, and non-adherence to medications, which can lead to serious complications and even readmissions. The aim of this study is to investigate the prevalence of DRPs and identify effective strategies for managing them in patients discharged from the Cardiology Department of Imam Hossein Hospital in Tehran in 2022.
Materials & Methods
This descriptive cross sectional study was conducted on 549 patients discharged from the Cardiology Department of Imam Hossein Hospital in Tehran. Data collection was carried out using researcher developed checklists and medication reconciliation questionnaires, which included demographic information, medication history, and clinical status of the patients. The collected data were analyzed using Stata version 14 statistical software, and various statistical tests were employed to examine differences and relationships between variables.
Results
The results showed that 43.35% of patients had at least one Drug-Related Problem (DRP). The most common issues were in the area of indication (57.47%), which included the prescription of unnecessary medications and duplicate therapy. Problems related to efficacy (19.36%), including incorrect dosages and drug interactions, as well as safety issues (9.84%) related to unsafe medications for patients, were also significantly observed. These problems occurred with nearly similar frequency across different age and gender groups.
Conclusion
This study demonstrated that DRPs are significantly prevalent among cardiac patients discharged from Imam Hossein Hospital, and they can lead to serious adverse effects and reduced quality of care. Utilizing medication reconciliation processes and close supervision by clinical pharmacists can aid in better identification and management of these issues. This study emphasizes the importance of clinical pharmacists' interventions in improving treatment outcomes and reducing complications associated with DRPs, and it suggests that similar strategies should be implemented in other hospitals to achieve significant improvements in the quality of care for cardiac patients.
Article Number: 55

Serum High-Sensitivity C-Reactive Protein Concentrations and All-Cause, Cardiovascular and Cancer Mortality: Results of The MASHAD Cohort Study

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Introduction

High-sensitivity C-reactive protein (hs-CRP) is a widely recognized biomarker of systemic inflammation, linked to cardiovascular and cancer outcomes. However, its association with long-term mortality remains inconsistent, particularly across genders. In this 10-year prospective analysis of 8,713 adults from the MASHAD cohort study in northeast Iran, we investigated the relationship between baseline hs-CRP levels and all-cause, cardiovascular, and cancer mortality. Our findings reveal a significant association between elevated hs-CRP and increased mortality risk in women, especially from all causes and cancer, with no corresponding associations in men. These gender-specific differences highlight the potential of hs-CRP as a prognostic tool in clinical risk stratification.

Materials & Methods

This study analyzed data from the MASHAD cohort, a longitudinal population-based study in northeast Iran, including 8,713 adults aged 35–65 years, free of cardiovascular disease and cancer at baseline. Participants were followed for 10 years to evaluate the association between serum high-sensitivity C-reactive protein (hs-CRP) levels and all-cause, cardiovascular, and cancer mortality. Serum hs-CRP concentrations were measured and categorized into tertiles. Multivariate Cox regression models were used to estimate hazard ratios for mortality outcomes across hs-CRP levels, adjusting for age, sex, BMI, smoking status, physical activity, diabetes, hypertension, dyslipidemia, and other potential confounders.

During follow-up, 343 deaths were recorded: 140 from cardiovascular causes and 108 from cancer. In women, higher hs-CRP levels were significantly associated with increased risk of all-cause and cancer mortality in several adjusted models. Notably, women in the highest hs-CRP tertile had a 42% higher risk of all-cause mortality compared to those in the lowest tertile (HR: 1.422; 95% CI: 0.913–2.213). A similar trend was observed for cancer mortality. However, in men, no significant associations were found between hs-CRP levels and any cause of mortality.

These findings suggest a sex-specific predictive value of hs-CRP, indicating that elevated systemic inflammation may be a stronger mortality risk factor for women. This highlights the importance of considering gender in inflammation-based risk assessments and supports further research into the underlying mechanisms driving these differences.

Results

During the 10-year follow-up, 343 deaths occurred, including 140 cardiovascular and 108 cancer-related deaths. Among women, higher hs-CRP levels were significantly associated with increased all-cause and cancer mortality. In fully adjusted models, women in the highest hs-CRP tertile had a 42% higher risk of all-cause mortality (HR: 1.422; 95% CI: 0.913–2.213) and an increased, though not statistically significant, risk of cancer mortality (HR: 1.822; 95% CI: 0.822–4.036). In men, no significant associations were observed between hs-CRP levels and all-cause, cardiovascular, or cancer mortality. Subgroup analyses revealed a significant interaction between hypertension and all-cause/cardiovascular mortality.

Conclusion

Our findings indicate that elevated hs-CRP levels are associated with an increased risk of all-cause and cancer mortality in women, but not in men, suggesting a potential gender-specific role of systemic inflammation in mortality risk. These results highlight the importance of considering sex differences in the interpretation of inflammatory biomarkers and their application in risk prediction models. Further research is needed to explore underlying mechanisms and the clinical value of hs-CRP in personalized preventive strategies.

Article Number: 177

Antihistamines for Granulocyte-Colony Stimulating Factor-Induced Bone Pain: a Systematic Review

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Introduction
Bone pain is one of the most prevalent adverse events in patients receiving granulocyte-colony stimulating factor (G-CSF). Recent studies demonstrated promising outcomes in the prevention of G-CSF-induced bone pain through histamine blockade. The present study aims to systematically review human studies regarding antihistamines use in preventing G-CSF-induced bone pain.
Materials & Methods
Method: A systematic search of electronic databases, along with a hand search, was conducted up to April 2025 with appropriate keywords. The study protocol was registered in PROSPERO (CRD: 420251010869). Eligible studies included randomized controlled trials (RCTs), cohorts, and case series evaluating antihistamines for G-CSF-induced pain in cancer patients. Risk of bias was assessed using Cochrane RoB2 for RCTs and ROBINS-I for observational studies. Narrative synthesis was performed due to study heterogeneity, with outcomes categorized by study design and analyzed qualitatively.
Results
Eight studies met inclusion criteria (3 RCTs [n=1013], 2 cross-sectional [n=144], 2 cohorts [n=162], and 3 case reports). RCT data showed that prophylactic loratadine neither reduced severe bone pain incidence nor improved quality of life in high-risk patients. Cohort studies revealed inconsistent pain management approaches, while cross-sectional data favored nonpharmacologic interventions for perceived effectiveness. Notably, case reports demonstrated loratadine's potential in refractory pegfilgrastim-induced pain, with one case achieving complete resolution.
Conclusion
While current evidence doesn't support routine loratadine prophylaxis for G-CSF-induced bone pain, it may benefit refractory cases. Further research is needed to identify optimal candidates and protocols.
Article Number: 197

Evaluation of Intravenous Acetaminophen Consumption Patterns in Hospitalized Patients at Imam Reza Hospital Mashhad

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Introduction
Today, the increasing use of injectable form of acetaminophen in medical centers due to the widespread use of this drug, for fever and pain management, has imposed heavy costs on the country's health system and also caused drug side effects such as hypotension and shortness of breath in mild cases and liver toxicity and anaphylactic shock in severe cases. For this reason, this study evaluated the pattern of intravenous acetaminophen consumption in patients hospitalized in Imam Reza Hospital in Mashhad.
Materials & Methods
In a retrospective study, between June 2013 and September 2014, 200 patients hospitalized in Imam Reza Hospital in Mashhad who received intravenous acetaminophen were studied based on information from the health information system (HIS). The patient records were reviewed, including the patient's history, clinical and laboratory findings, and consultation with the specialist and the relevant assistant. Patient demographics and prescription information, including reason for prescription, total dose, prescribing physician specialty, route of administration, rate of administration, vital signs, drug interactions, and potential adverse events were also collected, as well as information on contraindications to injectable acetaminophen or any precautions regarding its use.
Results
In this study, the records of 200 patients (105 women and 95 men) with a mean age of 66.20 ± 47.4 years receiving intravenous acetaminophen were reviewed. Findings indicated that mild to moderate pain and moderate to severe pain were 40.5% and 59.5% of the indications for acetaminophen prescription in patients, respectively, and fever was only 2%. Sixty-seven percent of patients had the correct indication for receiving injectable acetaminophen, of which 34.5% of patients were due to fasting, 31.5% of patients were due to nausea and vomiting, and only 1% of patients were due to diarrhea. Also, 196 patients (98%) received the correct dose, and 4 patients (2%) received a dose lower than the calculated dose. No specific complications were observed among the patients due to receiving injectable acetaminophen. Only one patient had a class C interaction with rifampin.
Conclusion
Intravenous acetaminophen is generally prescribed in selected departments of Imam Reza Hospital based on appropriate indications and doses, but monitoring the rational prescription of high-cost, expensive, or high-complication drugs can still be effective in rationalizing the use of these drugs and reducing costs, as well as improving clinical outcomes for patients.
Article Number: 154

Could the Administration of SGLT2i Agents Serve as a Viable Prophylactic Approach Against CNI-Induced Toxicities?

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Introduction

Calcineurin inhibitors (CNIs) are essential immunosuppressants for autoimmune diseases and organ transplantation, but they are linked to serious complications including newonset diabetes, hypertension, nephrotoxicity, dyslipidemia, cardiovascular risks, electrolyte imbalances, and neurotoxicity. While multi drug regimens are used to reduce CNI exposure, they often yield limited efficacy and introduce new adverse effects. Sodium glucose cotransporter 2 inhibitors (SGLT2is), originally antidiabetic agents, have shown renal and cardiovascular benefits in both diabetic and non diabetic patients. Given their antiinflammatory, antifibrotic, antioxidant, antihypertensive, and endothelial enhancing properties, we hypothesize that SGLT2is may prevent or mitigate CNI induced complications. If confirmed, this strategy could offer a single agent solution to reduce multiple side effects, ultimately improving long term outcomes in CNI treated patients.

Materials & Methods

This hypothesis-driven study proposes a phased approach combining preclinical and clinical investigations:

1. Preclinical Phase: Experimental models (rodent models receiving CNIs with or without SGLT2is) will be used to assess metabolic, cardiovascular, renal, and neurological endpoints. Biomarkers of inflammation, fibrosis, oxidative stress, apoptosis, and tubular dysfunction will be evaluated.

2. Clinical Phase: A prospective, randomized, placebo-controlled trial is envisioned involving solid organ transplant recipients or autoimmune patients receiving CNIs. Patients will be randomized to receive either standard care or standard care plus SGLT2 inhibitors. Key inclusion criteria will include both diabetic and non-diabetic individuals, with subgroup analysis based on underlying conditions.

3. Endpoints: Primary outcomes will assess incidence and progression of CNI-related complications such as NODAT, hypertension, nephrotoxicity, and neurotoxicity. Secondary outcomes will include changes in renal and cardiovascular function, hospitalization rates, quality of life scores, and relevant biomarkers.

Results

As this study is currently in the hypothesis and planning stage, no results are available. However, existing data from preliminary clinical trials and retrospective analyses suggest that SGLT2is are associated with reduced progression of CKD, improved cardiovascular outcomes, and improved metabolic profiles in high-risk populations. These findings form the rationale for further targeted investigation in the CNI-treated population.

Conclusion

If validated, the use of SGLT2 inhibitors could represent a paradigm shift in the management of CNI-induced complications. By leveraging the pleiotropic protective effects of SGLT2is, it may be possible to prevent or delay the onset of serious metabolic, renal, cardiovascular, and neurological adverse events in patients dependent on CNIs. This approach could ultimately improve long-term outcomes, reduce healthcare burdens, and enhance the quality and duration of life in transplant and autoimmune disease patients.

Article Number: 147

Correlation of Inflammatory Biomarkers with Neuropsychological Performance of COVID-19 Survivors After ICU Discharge: 20 Months Follow-up

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Introduction

COVID-19 infection may be related to development of neural damage and neural inflammation. Accumulating evidence highlighted the high prevalence of long-term mental health problems among COVID-19 survivors

Materials & Methods

This prospective study was conducted on patients discharged from the COVID-19 intensive care unit (ICU) between June and August 2021. Depression, anxiety, health anxiety, sleep quality and cognitive abilities were assessed. Also, inflammatory biomarkers including erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), Neutrophil-to-lymphocyte ratio (NLR), ferritin and D-dimer were measured. Data were analyzed using SPSS (version 22.0) and Pearson correlation analysis and multiple linear regression analysis. $p<0.05$ was considered significant.

Results

Among 78 survivors, 26% and 45.5% had moderate/severe degree of depressive and anxiety symptoms, respectively. Moreover, 25% of participants reported health anxiety and 61.8% poor sleep quality. The cognitive abilities had a significant inverse correlation with D-dimer level ($r=-0.44$, $p<0.001$). Moreover, BDI-II score was significantly correlated with ESR level ($r=0.29$, $p<0.06$). The only factor associated with BDI-II depression score was ESR levels ($\beta=0.37$, $p=0.013$). D-dimer was independently associated with cognitive abilities score ($\beta=-0.45$, $p=0.001$).

Conclusion

Although there was a high prevalence of mental disorders among patients discharged from COVID-19 ICUs even after 20 months, our results do not support a dominant role for inflammatory background (during acute phase of COVID-19) to explain the neuropsychological impairments long time after COVID-19 infection.

Article Number: 85

Evaluation of the Effect of Trans Sodium Crocetinate on Reperfusion Injury in Acute Myocardial Infarction With ST-Segment Elevation: a Double-Blind, Randomized, Placebo-Controlled Clinical Trial

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Introduction
This trial evaluated the effect of trans sodium crocetinate (TSC) a compound derived from crocetin, which acts as an antioxidant with other various pharmacological effects, on reperfusion injury in patients with ST-elevation myocardial infarction (STEMI) after primary percutaneous coronary intervention(PPCI). TSC has demonstrated efficacy in reducing the negative effects of reperfusion injury in animal models
Materials & Methods
This prospective double-blinded, randomized controlled trial investigated the effect of TSC(0.5 mg/kg) just before PPCI and 7.5mg crocetin tablets for 3 days after PPCI on reperfusion injury in 90 patients with STEMI. The primary outcome was the occurrence of ST-segment resolution ≥70% one hour after PCI, with secondary outcomes including corrected thrombolysis in myocardial infarction frame count (CTIMIFC), frequency of supraventricular and ventricular arrhythmias and echocardiogram parameters such as left ventricular(LVEF) ejection fraction and left ventricular(LV) size.
Results
Complete ST-segment resolution occurrence was significantly higher in the TSC group compared to the placebo group (p-value=0.018). There was no difference in CTIMIFC between the two groups. Echo-cardiographic parameters were similar between the TSC and placebo groups. Although not statistically significant, the frequency of supra-ventricular and ventricular arrhythmias was lower in the TSC group. Adverse drug effects were comparable between the two groups.
Conclusion
The administration of TSC shows promising results in improving ST-segment resolution in STEMI patients undergoing PPCI, suggesting a potential role in reducing reperfusion injury. While further studies are needed to confirm these benefits and explore additional outcomes, this pilot study provides an important step toward enhancing myocardial infarction and patient prognosis.
Article Number: 42

Evaluation of Polymorphisms on DOAC's Pharmacokinetic/Pharmacodynamic in Population with Non-Valvular Atrial Fibrillation

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Introduction
Atrial fibrillation(AF) accounts for 40% of all cardiac arrhythmias and is associated with a high risk of stroke and systemic thromboembolic complications resulting in morbidity and mortality. Dabigatran, rivaroxaban, apixaban, and edoxaban are direct oral anticoagulants(DOACs) that have been proven to prevent stroke in patients with non-valvular AF(NVAF).DOACs have a wide therapeutic index, fast onset and cessation of action, and relatively low potential for interactions with other drugs and food. DOACs have transformed the management of NVAF. However, variability in DOAC efficacy and safety among individuals remains a significant challenge, often attributed to genetic factors. Prior reviews have predominantly focused on single-gene associations, overlooking the complexity of multi-gene interactions and their clinical implications.
Materials & Methods
Evidence Acquisition: A narrative review was conducted using Scopus, Google Scholar, PubMed, and Cochrane libraries with targeted search terms, non-valvular atrial fibrillation, direct oral anticoagulant, polymorphism, genetic, dabigatran, rivaroxaban, apixaban, edoxaban, and betrixaban. Studies published in English from 1975 to November 2024 investigating the influence of genetic polymorphisms on DOAC effectiveness and safety in NVAF patients were included.This study adhered to ethical guidelines, ensuring no patient data were directly utilized.
Results
Polymorphisms in key genes involved in DOAC metabolism(e.g., CYP2C9, CYP3A4), transport(e.g., P-glycoprotein, OATP1B1), and the coagulation pathway (e.g., VKORC1, CYP2C19) significantly impact drug exposure, plasma concentrations, and clinical outcomes. Reduced activity variants are associated with increased bleeding risk, emphasizing the need for individualized dosing. Despite these insights, limited data exist on how multi-gene interactions and their cumulative effects influence clinical outcomes and the practical challenges of implementing pharmacogenetic strategies in routine care. Information on the genetic effects is limited owing to the lack of large-scale studies. There is a need to design and conduct large studies in different ethnic groups, including sufficient numbers of patients for genetic association studies.
Conclusion
Uncovering the mechanisms of genetic determination of sensitivity to DOACs may provide keys to personalize therapies based on patient-specific genetic variants and improve the efficacy and safety of direct oral anticoagulants in the general population. The pharmacogenetic testing results can be a valuable tool for doctors in selecting appropriate dosages of DOACs, particularly in cases requiring long-term pharmacotherapy with these drugs.Genetic factors are pivotal in determining DOAC efficacy and safety in NVAF patients. While personalized dosing strategies hold promise for optimizing outcomes and minimizing adverse effects, further research is required to address multi-gene interactions and integrate pharmacogenetics into clinical practice.
Article Number: 176

Economic Evaluation of Adding Pertuzumab to Trastuzumab in Neoadjuant Treatment of Breast Cancer from the Perspective of Insurers

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Introduction
Breast cancer is the most common type of cancer among Iranian women. Targeted therapy is one of the treatment approaches for breast cancer. Since a major portion of breast cancer-related costs is associated with drug therapy at various stages of the disease, one of the ways to reduce both the economic and disease burden is the early use of targeted therapy(pertuzumab and trastuzumab). This strategy decreases the number of patients progressing to the advanced(metastatic) stage. Despite the clinical superiority of adding pertuzumab to the treatment regimen for patients with HER2+ breast cancer, the economic impact of this change on insurance organizations remains unclear. This study aims to determine the cost-effectiveness and budget impact of adding pertuzumab to trastuzumab in the neoadjuvant treatment of breast cancer in Iran to facilitate evidence-based decision-making regarding its inclusion in insurance coverage.

Materials & Methods
This study employed a Markov model with a lifetime horizon for patients to simulate the long-term clinical and economic outcomes of patients with HER2-positive breast cancer undergoing neoadjuvant therapy. The model included two treatment regimens: trastuzumab plus docetaxel, and the combination of trastuzumab, pertuzumab, and docetaxel. Clinical outcomes were obtained through a systematic review of published studies, and cost data were extracted from relevant databases. The final outcome was reported as incremental cost per quality-adjusted life year (QALY). Incremental Cost-Effectiveness Ratio (ICER) was computed and sensitivity analyses was used to test the robustness of the model. Furthermore, the budget impact of adding pertuzumab to trastuzumab was calculated.

Results
The mean discounted cost difference for treating women with HER2+ breast cancer using the pertuzumab + trastuzumab + docetaxel regimen, compared to the trastuzumab + docetaxel regimen, was 241,637,081IRR per patient. In terms of effectiveness, the incremental discounted utility in the three-drug regimen was 0.34 QALYs higher than the two-drug regimen. The results showed that the incremental cost-effectiveness ratio (ICER) of adding pertuzumab was 715,427,531 IRR per QALY, which, considering Iran's willingness-to-pay (WTP) threshold of 1,200,000,000 IRR, is classified as highly cost-effective. Sensitivity analysis indicated that the model was not sensitive to changes in variables. The budget impact in the first year was estimated at 200 billion IRR.

Conclusion
The economic evaluation of adding pertuzumab to trastuzumab from the perspective of insurance organizations indicates that it is highly cost-effective. The associated budget impact, while significant, could be assessed with appropriate patient coverage considerations.

Article Number: 138

Systematic Umbrella Review and Meta-analysis of Systematic Reviews Evaluating the Efficacy and Safety of Pharmacological Treatments for COVID-19”

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Introduction

This study systematically evaluated published systematic reviews focused on pharmacological treatments for COVID-19. An umbrella meta-analysis was conducted to assess the efficacy and safety of each pharmacological intervention based on existing meta-analyses.

Materials & Methods

A comprehensive search was conducted across four electronic databases—PubMed, Scopus, Cochrane Library, and Web of Science—from December 2019 to September 2022. Eligible studies included systematic reviews and meta-analyses that examined the effectiveness and safety of pharmacological therapies for the treatment of COVID-19. The pooled relative risk (RR) estimates were calculated using the DerSimonian and Laird random-effects model, and analyses were performed using STATA software. Forest plots and summary tables were used to visualize findings. The primary outcome of interest was all-cause mortality. The methodological quality of the included studies was assessed using the AMSTAR tool.

Results

From 285 systematic reviews (222 meta-analyses), the most frequently studied drugs included hydroxychloroquine, tocilizumab, remdesivir, corticosteroids, JAK inhibitors, and others.

Tocilizumab, remdesivir, corticosteroids, JAK inhibitors, anakinra, colchicine, ivermectin, and sofosbuvir significantly reduced mortality (RRs ranging from 0.69 to 0.95). Hydroxychloroquine increased mortality (RR=1.02), while lopinavir, ACEIs, and azithromycin showed no significant effect.

Several drugs (e.g., tocilizumab, JAK inhibitors, anakinra, corticosteroids, sofosbuvir) were associated with reduced ICU admissions, mechanical ventilation, and hospital stays. Only one-third of the included studies were of high methodological quality (AMSTAR ≥70%).

Conclusion

This umbrella meta-analysis provides a comprehensive synthesis of current evidence on pharmacological treatments for COVID-19. The findings offer valuable insights for evidence-based clinical guideline development and inform decision-making for healthcare policymakers.

Article Number: 226

The Effectiveness of Perovskia Abrotanoides Extract Topical Formulation on Cutaneous Leishmaniasis: A Randomized Controlled Clinical Trial

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Introduction

Leishmaniasis is a major parasitic disease affecting humans and animals, with 2 million new cases yearly and over 350 million at risk worldwide. However, drug resistance and side effects limit treatment effectiveness. Perovskia abrotanoides, a medicinal plant found in Iran and neighboring countries, contains bioactive compounds with anti-leishmanial, antioxidant, and anti-inflammatory properties. Despite promising lab results, clinical studies are lacking. This study investigates the effects of a topical formulation of P. abrotanoides extract on cutaneous leishmaniasis.

Materials & Methods

In this randomized controlled clinical trial, patients with cutaneous leishmaniasis were assigned to experimental (n=18) and control (n=18) groups. Both groups received intralesional meglumine antimoniate (Glucantime®). The experimental group also received 5% Brazambel extract ointment once a day. The interventions continued until the complete healing of the lesions (re-epithelialization) for a maximum of 8 weeks. The clinical response, defined as complete response (re-epithelialization > 75%), partial response (re-epithelialization 50% to 75%), or treatment failure (re-epithelialization < 50%) was compared between the groups.

Results

Regarding the physicochemical parameters of the ointment, the appearance of the formulation was homogeneous with brown color. The smell of ointment was mild and pleasant. Air bubbles and particles were rarely observed under the light microscope. The mean pH was 6.87 ± 0.1. Figure 1 demonstrates the rheological behavior (rheogram) of the formulation, showing the pseudoplastic properties of the product. Over the study period, among 44 patients who were assessed for eligibility, 42 patients met the inclusion criteria. A total of 41 patients agreed to cooperate and were randomly divided to two experimental and control groups. Finally, 18 patients in each group completed the study

Conclusion

The use of P. abrotanoides extract 5% topical formulation has no effect on the acceleration of cutaneous leishmaniasis lesions. More clinical studies are necessary to confirm or reject these results.

Article Number: 208

Evaluation of Drug Dose Adjustment in Chronic Renal Failure in Patients Admitted to the Cardiovascular Ward of Shahid Chamran Hospital

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Introduction
Chronic Kidney Disease (CKD) represents a significant challenge within the healthcare system, particularly among hospitalized patients. This condition impairs the kidneys' ability to excrete and adjust medication dosages, which can lead to serious side effects, increased treatment costs, and reduced treatment efficacy. According to various studies, approximately 10% to 32% of adverse drug reactions in patients with kidney failure are attributed to inadequate dosage adjustments. Therefore, evaluating the accuracy of medication dosage adjustments in CKD patients is of paramount importance.
Materials & Methods
This descriptive-analytical study aimed to assess the accuracy of medication dosage adjustments in patients with chronic kidney disease admitted to the cardiology section of Shahid Chamran Hospital in Isfahan. A total of 159 patients were randomly selected for this study. Data collected included age, gender, clinical status, prescribed medications, and the necessity for dosage adjustments based on kidney function. After data collection, statistical software was utilized to analyze the information and examine the relationships between patient characteristics and medication dosage adjustments. Additionally, medications were categorized to identify the need for dosage adjustments within each category
Results
The findings of this research revealed that approximately 30% of the prescribed medications were not accurately adjusted. This misalignment was particularly evident in cardiovascular and antibiotic medications. Notably, patients with advanced stages of kidney failure exhibited a greater need for dosage adjustments. Statistical analysis indicated a significant relationship between patient age and the extent of medication dosage misalignment. Specifically, the likelihood of
improper dosage adjustments increased with the patient's age.
Conclusion
The results of this study highlight the critical importance of dosage adjustments for medications in patients with kidney failure. Physicians must be more vigilant regarding the pharmacodynamic and pharmacokinetic characteristics of medications. Continuous education on dosage adjustments and awareness of kidney failure's impact on drug metabolism can contribute significantly to improving therapeutic outcomes. It is recommended that specific protocols be developed for evaluating and adjusting drug dosages in CKD patients. Furthermore, organizing educational workshops for physicians and nurses on kidney failure management and medication protocols could enhance the quality of care for these patients.
Article Number: 206

Evaluating The Effect Of Loratadine On T Regulatory Cell Count In Healthy Subjects: A Randomized Crossover Trial

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Introduction
Basophils are rare granulocytes that play significant roles in allergic inflammation and immune responses. Emerging evidence suggests that activated basophils suppress T-regulatory cells (Tregs), potentially altering immune tolerance and contributing to immune dysregulation. Tregs play a central role in maintaining immune homeostasis by suppressing excessive immune reactions, including responses to allergens and self-antigens. However, elevated Treg activity has also been implicated in tumor progression, as Tregs can inhibit anti-tumor immune responses and promote immune escape of cancer cells. Loratadine, a widely used H1-antihistamine, may interfere with basophil-Treg interaction and consequently affect immune modulation. Disrupting this interaction could potentially reduce Treg function and shift immune balance toward a more cytotoxic, anti-tumor phenotype. This study aimed to investigate the effect of Loratadine on Treg cell populations in healthy individuals.

Materials & Methods
This was a randomized, blinded, placebo-controlled, crossover clinical trial conducted on 34 healthy volunteers aged 18–65 years. Participants were randomly assigned to two groups receiving either loratadine (10 mg daily) or placebo for 21 days, followed by a 21-day crossover intervention. Blood samples were collected at baseline, at the end of the first treatment period, and following completion of the second treatment period. Primary outcomes included changes in CD25, CD25+CD4+ regulatory T cells, effector T cells, GZMBB+ cells, and FOXP3 expression, assessed via flow cytometry. Statistical analyses were performed using Stata 14 with non-parametric tests (Mann–Whitney U, Wilcoxon signed-rank, and crossover analysis of variance (ANOVA) via the “Pkcross” package). A $P<0.05$ was considered statistically significant.

Results
Among the 35 participants, 18 were assigned to the loratadine-first group and 17 to the placebo-first group. Between-group analysis showed a significant increase in CD25 ($p=0.004$) and CD25+CD4+ Treg cells ($P=0.031$) during the loratadine intake period compared to placebo. Within-group comparisons revealed a significant decrease in FOXP3 expression following loratadine administration in the first period ($P=0.042$). In the second period, CD25 levels were significantly reduced among those receiving loratadine ($P=0.001$), as well as CD25+CD4+ Treg cells ($P=0.005$). GZMBB levels significantly increased in participants who received placebo during the second period ($P=0.046$). Sequence and period effects were negligible, except for CD25 and effector T-cell markers, indicating a significant treatment effect.

Conclusion
Loratadine administration in healthy individuals significantly reduced the expression of CD25 and Treg markers, indicating a potential immunosuppressive effect through Treg modulation. Given the established role of Tregs in maintaining immune tolerance and their involvement in suppressing anti-tumor immunity, these findings raise important concerns about the long-term safety of over-the-counter H1-antihistamines. Regular use of such agents may unintentionally alter immune surveillance mechanisms, potentially influencing the risk of tumor development or progression. Further studies are warranted to explore this effect in clinical settings and cancer-prone populations.

Article Number: 62

Methotrexate Mistake: Fatal Consequences of Dosage Errors in Patient Care

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Introduction

Medication errors are one of the primary reasons for avoidable harm in clinical settings, especially with high-risk drugs like methotrexate where the slightest dose deviation will result in death. Interprofessional collaboration has been identified as a natural component of pharmacovigilance systems through which the timely detection of safety risks occurs through the introduction of effective and wide-ranging interventions. Methotrexate (MTX) is a narrow-index antifolate, a high-alert drug owing to intense toxicity with minor dose deviation (1). At normal doses (e.g., 10–25 mg/week in autoimmune illness), MTX is carefully monitored for myelosuppression, nephrotoxicity, and mucositis (5). However, prescription or medication errors, especially between high-dose parenteral and low-dose oral formulations, are fatal (2). Here in this article, we discuss this medication error and related preventive actions.

Materials & Methods

A retrospective review of the patient's previous history of illness, drug history, and course of treatment was conducted on a fatal adverse drug reaction (ADR) case reported through Iran's national pharmacovigilance system (adr.ttac.ir) in 2024. This is a case presentation of a 70-year-old female patient who was undergoing an incorrect dose of MTX through dispensing error. Incorrect clinical judgment was then followed with the use of ibuprofen that induced MTX toxicity through pharmacokinetic interaction (4). The patient indicated severe mucositis after the injection of 1000 mg MTX by intramuscular route (versus oral MTX 10 mg). The time gap between drug error and delayed diagnosis was also verified, with special interest for NSAID-potentiation of MTX toxicity (5).

Results

The physician, due to negligence in taking adequate history and thus being unaware of the overdose, had given ibuprofen, which added to toxicity by blocking renal excretion of MTX (4). Delay in diagnosis by 10 days led to fatal, irreversible multiorgan failure (5). Following this incident, the Iranian Food and Drug Administration issued an important notice regarding the use of methotrexate and emphasized the critical role of healthcare professionals, from distribution to consumption of this product. This notice was announced to physicians nationwide through the IFDA's provincial deputy offices. This advisory led to a decline in similar incidents nationwide, indicating the effectiveness of the implemented measures.

Conclusion

This case demonstrated the necessity of error-proof prescribing practice (e.g., electronic warning of high-dose MTX) and the importance of the knowledge about the narrow safety margin of narrow-index drugs among clinicians (1-2). Multidisciplinary action in the form of pharmacist verification and patient education must be initiated to prevent such catastrophic events (3). These results underscore the vital importance of interdisciplinary teamwork in recognizing, reporting, and addressing serious medication errors. Collective efforts by clinical and regulatory partners have resulted in comprehensive changes, such as providing safety warning announcements and fostering communication among professionals are crucial for maintaining advancements in medication safety.

Article Number: 141

Comparative evaluation of the frequency of thromboembolic complications and clinical outcomes in hospitalized pregnant and postpartum women with COVID-19 with normal, high, and very high levels of D-dimer in the COVID ward of Imam Reza Hospital in Mashhad: a case series study

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Introduction

Venous thromboembolism is a significant cause of mortality in COVID-19 patients. Considering the elevated risk of thromboembolic events in pregnant and postpartum women this study aims to investigate the prescription trends of anticoagulant drugs in hospitalized pregnant and postpartum women with COVID-19 and the frequency of thromboembolic complications and patients' clinical outcomes.

Materials & Methods

This retrospective, single-center, cross-sectional study was conducted on pregnant and postpartum women with COVID-19 admitted to Imam Reza Hospital in Mashhad, Iran, between July 2021 and September 2021 (the fifth peak of the pandemic in Iran). The serum level of D-dimer, anticoagulant type and dose, thromboembolic events incidence, and pregnancy and maternal outcome were recorded and assessed with SPSS19 software.

Results

In this study, 52 patients who were pregnant or postpartum and hospitalized with COVID-19 were evaluated. Thirty-nine percent of the patients had one or more additional risk factors for thromboembolic events, apart from their pregnancy and postpartum status. At admission, 81% of the patients had a D-dimer level exceeding 1000 nanograms per milliliter. Two patients experienced thromboembolic events, both of which were presented as pulmonary embolism and linked to D-dimer levels higher than 1000 nanograms per milliliter. Additionally, two patients suffered severe bleeding complications while receiving therapeutic anticoagulation. Ultimately, three patients (6%) died, with two cases attributing pulmonary embolism as the cause of death, while the cause remained uncertain in one case

Conclusion

The prophylactic and even therapeutic doses of anticoagulants may not completely prevent thromboembolic events in severe and critical cases of COVID-19. In addition, patients are not completely protected from pulmonary embolism even with therapeutic anticoagulation, Hence, regular monitoring is crucial, and physicians should use efficient diagnostic methods for accurate diagnosis.

Article Number: 44

Evaluation and Comparison of the Effectiveness of Atropine Eye Drops, Ipratropium Bromide Nasal Spray, and Amitriptyline Tablet in the Management of Clozapine-Associated Sialorrhea in Patients With Refractory Schizophrenia: A Randomized Clinical Trial

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Introduction

Clozapine, a second-generation antipsychotic medication, is mainly indicated for managing treatment-resistant schizophrenia. Among all the nonthreatening adverse effects of clozapine, sialorrhea is a stigmatizing complication occurring in approximately 31.0% to 97.4% of patients. In this study, 2 topical agents (atropine eye drop and ipratropium nasal spray) and a systemic medication (amitriptyline) were compared simultaneously for the management of clozapine-associated sialorrhea.

Materials & Methods

We conducted a randomized, single-blinded, non–placebo-controlled clinical trial from June 2022 to January 2023. Eligible patients were randomly allocated into 3 mentioned groups. Patients were monitored for sialorrhea weekly based on scales, including the Toronto Nocturnal Hypersalivation Scale, Clinical Global Impression-Improvement, and Clinical Global Impression-Severity for 1 month. Possible adverse drug reactions and adherence were also recorded.

Results

Twenty-four patients, including 6, 10, and 8 individuals in ipratropium bromide nasal spray, atropine eye drop, and amitriptyline groups, completed the study, respectively. The cohort's demographic, baseline clinical, and sociocultural characteristics were comparable among the 3 groups. Within-group comparisons, between times baseline and week 4, demonstrated that significant differences were in groups atropine and amitriptyline based on Toronto Nocturnal Hypersalivation Scale, in 3 groups based on Clinical Global Impression-Improvement, and also in only-atropine group based on Clinical Global Impression-Severity. Likewise, between-group comparisons showed that atropine was significantly more effective in clozapine-associated sialorrhea management than amitriptyline and ipratropium, in the first 2 weeks and second 2 weeks of study, respectively. Regarding safety, the interventions were tolerated relatively well.

Conclusion

Conclusively, atropine is more efficacious than amitriptyline, within the first 2 weeks of study and also relative to ipratropium, overall. As time effect was significant between atropine and amitriptyline, according to analysis of covariance test, further investigation with longer follow-up duration would be prudent. In addition, expanding patient population with larger sample size should be conducted for more precision.

Article Number: 180

Improving Medication Safety Through Interdisciplinary Collaboration: Lessons from Fatal Amphotericin B Misuse in Iran

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Introduction

Background: Medication errors remain a leading cause of preventable harm in clinical practice, particularly involving high-risk medications such as Amphotericin B. Confusion between its conventional and liposomal formulations has led to catastrophic dosing errors, including fatalities. Interdisciplinary collaboration is recognized as a cornerstone of pharmacovigilance systems, enabling early identification of safety risks and effective, system-wide interventions. This article presents three case studies exemplifying effective collaboration among healthcare providers, including physicians, nurses, clinical pharmacists, national regulatory authorities, and the pharmaceutical industry, in addressing medication-related hazards.

Materials & Methods

Methods: This study analyzed three fatal adverse drug reaction (ADR) cases reported through Iran's national pharmacovigilance system (adr.ttac.ir) in 2023 (1402). Reports were submitted by clinical staff and evaluated by the Department of Pharmacovigilance and Health Products Use Surveillance at the Iran Food and Drug Administration (IFDA). Root cause analysis was conducted through interdisciplinary collaboration among physicians, pharmacists, nurses, and regulatory authorities to identify contributing factors and implement corrective actions (7-9). To assess the effectiveness of the safety interventions including the addition of boxed warnings on conventional Amphotericin B packaging and the issuance of official safety alerts to medical universities the ADR reporting archive from the national database was reviewed and compared across two years: 2023 (1402) and 2024 (1403).

Results

Results: All three patients received conventional Amphotericin B at high doses appropriate only for liposomal formulations, resulting in fatal arrhythmias. In one case, improper dilution in normal saline, rather than the recommended 5% dextrose, led to precipitation and enhanced toxicity (1, 2). Additional risk factors included concomitant medications such as dexamethasone, colistimethate sodium, and linezolid, which are known to cause or exacerbate electrolyte disturbances and prolong QT interval (10-12). Following these incidents, IFDA mandated boxed warnings for all conventional Amphotericin B products and disseminated national safety alerts to clinical centers (8, 9). In 2024 (1403), only one similar case was reported, suggesting a substantial reduction in recurrence and indicating the effectiveness of the implemented measures.

Conclusion

Conclusion: These findings highlight the critical role of interdisciplinary collaboration in identifying, reporting, and mitigating severe medication errors. Coordinated action among clinical and regulatory stakeholders led to system-wide changes, including labeling reform and provider education. Strengthening formulation awareness, reinforcing pharmacovigilance infrastructure, and promoting interprofessional communication are essential to sustaining improvements in medication safety (4-6, 13, 14).

Article Number: 117

Evaluation of the effectiveness of Elaeagnus angustifolia extract orally lozenge in the treatment of oral aphthous ulcers: a randomized, one-blind, placebo-controlled clinical trial

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Introduction

Recurrent oral aphthous is one of the most common oral cavity disease which is mainly characterized by painful mouth elliptical ulcer with erythematous margins and may develope anywhere in oral cavity and reduces the quality of life of patients.The etiology of oral aphthous is not clearly defined but several factors, including physical and chemical trauma, systemic disease, genetic factors, viral and bacterial infections, seem to be involved.In recent studies, various compounds such as flavonoids, alkaloids have been derived from Elaeagnus angustifolia and made known as, anti-inflammatory, antimicrobial and wound-healing agent.In this study, considering the inflammatory and wound-healing capability of Elaeagnus angustifolia, lozenge formulation was used to take advantage of the topical releasing of drug in the mouth over a proper period of time, with the aim of reducing inflammation and the size of oral aphthous ulcers locally.

Materials & Methods

In pharmacognocy department, the desired active ingredients of the provided powder of fruit of Elaeagnus angustifolia were extracted by hydroalcoholic solvent and concentrated in a rotary connected to the vacuum pump. The presence and percentage of active ingredient compounds were proven by the Folin-Ciocalteu`s method

Lozenge of Elaeagnus angustifolia and placebo were provided by molding-mixture method, 10%v/v of provided extraction were added to the mixture for drug group, then cooled in desired matrix.

a randomized, one-blind, placebo-controlled clinical trial was conducted and patients were selected through a recall from those who were referred to the dental clinic of IUMS were randomly divided into experimental (Elaeagnus extract) or placebo groups. The lozenge were adminesterd four times a day for 5 days. The size of aphthous ulcers and the pain by visual analogue scale (VAS) were recorded at days 0, 2, and 5 and compared between the groups.

Results

34 patients were completed the study (18 people in drug group and 16 people in placebo group). Patients in the drug group reported a significant reduction in the size of ulcer on the second ($P = 0.003$) and fifth ($P < 0.001$) days as well as the pain score on the second ($P = 0.003$) and fourth ($P=005$) days of the intervention compared to placebo. Furthermore, at the end of the intervention, the number of patients with complete ulcer healing and pain relief in the experimental group was significantly more than the placebo group (14 vs. 4, $P = 0.002$).

Conclusion

Taking Elaeaegnus angustifolia extract lozenge, reduces the size of ulcer and pain severity and accelerates the healing process in the oral aphthous lesions.

Article Number: 205

Preparation of ointment containing Arnebia euchroma root extract and evaluation of its effect on diabetic foot ulcer: A randomized controlled clinical trial

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Introduction

Diabetes Mellitus is considered a silent disease with chronic complications such as diabetic foot ulcers. Diabetic foot ulcer is a very serious complication in diabetic patients, which, while worsening the patient's condition, also has a significant economic impact. The aim of this study was to investigate the effect of topical ointment containing Arnebia euchroma root extract in accelerating the healing of diabetic foot ulcers

Materials & Methods

In this controlled and randomized clinical trial, 60 patients with diabetic foot ulcers, with Wagner grade 1 and 2 ulcers, were divided into two experimental and control groups. The experimental group (30 people) received the ointment containing Arnebia euchroma root extract once daily, and the control group (30 people) received the usual new hospital dressing daily for 14 days. In both groups, daily debridement and washing with normal saline were performed. The duration of treatment and follow-up was 14 days. The percentage of wound size change at the end of days 7 and 14 of the intervention and the number of cases of complete healing of the wound at the end of the intervention were determined and compared between the two groups.

Results

In both groups, on the 7th and 14th days of the intervention, the wound size decreased significantly; However, in both times, the percentage of size reduction in the experimental group was more than the control group (day 7: 62.56 ± 23.87 vs. 22.99 ± 14.70; day 14: 85.65 ± 14.36 vs. 61 39/94/±20)

Also, at the end of the intervention, in 8 members of the experimental group, complete healing of the wound was observed, while no complete healing was observed in any of the members of the control group

Conclusion

Ointment containing Arnebia euchroma root extract accelerates the healing of grade 1 and 2 diabetic wounds and can be considered as a potential treatment for this disorder.

Article Number: 216

Insight Role of Pharmaceutical Intervention for Improving Medication Safety in ICUs: A Systematic Review of Effectiveness and Outcomes

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Introduction

In intensive care units (ICUs), patient safety is crucial, yet drug-related problems (DRPs) and adverse drug events (ADEs) are significant concerns, often stemming from medication errors. The incidence of ADEs in ICUs is notably higher than in general medical wards, estimated at 2.4 to 87.5 per 1,000 patients daily. Interventions like pharmacist involvement and computerized systems have proven effective in enhancing patient safety and reducing healthcare costs.

Materials & Methods

The systematic review protocol adheres to PRISMA 2020 Guidelines and utilizes the CHARMS checklist for data extraction and appraisal. A comprehensive search was conducted in PubMed, Scopus, and Web of Science for articles on ADEs in critical care, using specific keywords and limited to English publications until July 21, 2024. Only original studies focusing on clinical pharmacist interventions or clinical decision support systems (CDSS) aimed at reducing ADEs in ICUs were included. Data extraction and risk of bias assessment were performed independently by pairs of authors. The methodological quality of included studies was assessed using the QualSyst tool, with scores of 0.5 or higher indicating satisfactory or high quality.

Results

The systematic review included 41 studies, predominantly from Western countries and published after 2010, with sample sizes ranging from 33 to 11,634 patients. The research revealed that pharmacist interventions, present in about 75% of the studies, and CDSS, used in 36.8% of the studies, were the primary intervention methods. These interventions resulted in significant positive outcomes, including a reduction in ADEs (28.95% of studies), increased patient safety (18.42%), reduced healthcare expenditures (21.05%), and optimization of treatment regimens (23.68%). The overall ADE rate was 15.45 per 1,000 patient days, with higher rates identified by trigger tools and non-targeted chart reviews. In 39.5% of the studies, cost evaluations generally reported positive financial outcomes associated with pharmacist interventions, including cost savings and favorable cost-benefit ratios.

Conclusion

This research emphasizes the vital role of clinical pharmacists in multidisciplinary teams and their positive impact on healthcare outcomes. Their involvement is associated with fewer DRPs, shorter lengths of stay, and reduced financial burdens for patients and the healthcare system. The integration of CDSS enhances treatment processes and patient monitoring by providing real-time data that aids healthcare providers in making informed decisions while minimizing errors. The findings indicate that interventions involving clinical pharmacists and CDSS lead to significant benefits, but further research is needed to fill existing knowledge gaps and draw more definitive conclusions.

Article Number: 113

Role of Hospital Pharmacists in Disaster Response

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Introduction
Background: WHO defines disaster as a circumstance dismembering the normal conditions of reality and causing a position of suffering that exceeds the capacity of adaptation of the affected community. These situations bear a comprehensive approach to healthcare delivery in exigency situations. Hospitals and their specialists have an important part in the frontal line of response operation. Healthcare installations with multi-specialty brigades, including hospital pharmacist, are a high pillar for disaster operation.
Objective: We aimed to review a broad range of hospital pharmacist' places in disasters and their responses. The findings aim to inform policymakers, healthcare directors, and drugstore professionals about the vital benefits of druggists in disaster operation, championing their inclusion in planning and response sweats.
Materials & Methods
Methodology: The methodology used the Preferred Reporting particulars for Methodical Reviews and Meta- analyzes Extension for Scoping Reviews(PRISM- SCR) guidelines, with methodology acclimated by the Joanna Briggs Institute. The databases were searched for sources published after 2000, including PubMed, Scopus, Embase, and Web of Knowledge.
Results
Results: Main themes of part conditions were linked, encompassing their involvement in drug operation, force chain logistics, clinical support, and public health enterprise.
Conclusion
Conclusion: This review identifies crucial places of hospital pharmacists in responding to natural or man-made disasters.
Article Number: 43

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چهاردهمین همایش داروسازی بالینی ایران

بررسی دانش، نگرش و عملکرد دانشجویان پزشکی در مورد آسیب کلیوی ناشی از NSAID ها در مرکز آموزشی- درمانی زنان ارومیه

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مقدمه

داروهای ضد التهاب غیر استروئیدی گروهی از داروهای شایع و موثر هستند که به طور گسترده برای تسکین درد کاهش التهاب و کنترل تب در بیماری‌های مختلف استفاده می‌شوند. با این حال این داروها می‌توانند عوارض جانبی متعددی از جمله آسیب حاد کلیه AKI (Acute Kidney Injury) ایجاد کنند. تحقیقات نشان داده است که بیشترین خطر AKI ناشی از NSAID ها در ۴۵ روز اول درمان، دوزهای بالا، مصرف همزمان بیش از یک NSAID یا سوئیچ سریع دارو به NSAID دیگر مشاهده می‌شود. این خطر به ویژه در بیماران سالمند، دیابتی، مبتلا به بیماری مزمن کلیه یا کسانی که به طور همزمان از داروهای دیورتیک یا مهار کننده‌های RAS استفاده می‌کند، بیشتر است. استفاده گسترده از NSAID ها در محیط‌های بالینی و عدم آگاهی کافی دانشجویان از عوارض بالقوه آنها، منجر به طراحی مطالعه‌ای جهت بررسی دانش، نگرش و عملکرد آنها در ارتباط با خطرات آسیب کلیوی ناشی از این داروها شد.

مواد و روش ها

این مطالعه توصیفی-مقطعی بر روی ۵۰ دانشجوی پزشکی در بیمارستان جامع زنان ارومیه انجام شد. به منظور ارزیابی دانش، نگرش و عملکرد شرکت کنندگان یک پرسشنامه ساختار یافته بر پایه مدل KAP طراحی شد. دانش: ۱۵ سوال در مورد مکانیسم اثر NSAID ها، ریسک فاکتورها و دوزهای ایمن؛ نگرش: ۱۰ سوال در مورد باورها و حساسیت ها نسبت به مصرف NSAID در بیماران پرخطر؛ عملکرد: ۵ سوال در مورد مواجهه بالینی در بیماران پرخطر در برابر آسیب کلیوی ناشی از NSAID ها. روایی پرسشنامه توسط متخصصان مربوطه تایید شد. پایایی پرسشنامه نیز با استفاده از آلفای کرونباخ (۰.۸۲) تایید گردید. برای مقایسه بین گروه‌ها از آزمون کای دو و برای بررسی همبستگی بین نتایج دانش، نگرش و عملکرد از آزمون همبستگی پیرسون استفاده شد.

نتایج

از مجموع ۵۰ شرکت کننده ۶۰ ٪ زن و ۴۰ ٪ مرد بودند. میانگین سنی شرکت کنندگان ۲۵ سال بود. نمره میانگین دانش شرکت کنندگان در مورد ریسک فاکتورهای مرتبط با NSAID ۷۰٪ بود که نشانگر آگاهی نسبتاً پایین آنها در این مورد بود. در زمینه نگرش، ۶۵٪ شرکت کنندگان به اهمیت کاهش استفاده از NSAID ها در بیماران پرخطر تاکید داشتند. اما تنها ۴۰٪ از آنها در مواجهه با بیماران پرخطر از دوزهای ایمن یا داروهای جایگزین استفاده می‌کردند (عملکرد). تحلیل همبستگی نشان داد که دانش بالا با نگرش و عملکرد صحیح همبستگی مثبت دارد.(P-value<0.05)

نتیجه گیری

این مطالعه نشان داد که دانشجویان پزشکی به ویژه در زمینه ریسک فاکتورهای مرتبط با مصرف NSAID ها و روش‌های پیشگیری از آسیب کلیوی آگاهی کافی ندارند. با وجود اینکه بیشتر آنها نگرش مثبتی نسبت به استفاده ایمن از این داروها داشتند، ولی عملکرد بالینی آنها مطلوب نبود. از این رو پیشنهاد می‌شود که در دوره‌های آموزشی و کارآموزی پزشکی به طور خاص به این موضوع پرداخته شده و آموزش‌هایی در راستای پیشگیری از آن ارائه گردد. اصلاح نگرش‌های موجود در مورد تجویز داروها و ارتقای آگاهی بالینی به ویژه در زمینه ریسک فاکتورها و دوزهای مناسب می‌تواند از بروز نارسایی حاد کلیه ناشی از NSAIDها جلوگیری کند. در این راستا داروسازان بالینی باید در مراحل مختلف درمانی نقش فعال‌تری ایفا کنند.

Article Number: 190

Acute Myeloid Leukemia in Pregnancy: Case Report

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Introduction

AML is the most common form of acute leukemia among adults accounts for 1.3% of all new cancer cases and 1.8% of all cancer deaths in the United States. AML occurs more frequently with advanced age, with mean patient age of 67 years at diagnosis. The incidence of cancer is one in 1,000 pregnancies, Due to the aggressive nature of the disease treatment for leukemia should be initiated promptly, as delaying treatment is fatal. Cancer during pregnancy is challenging as Pregnancy-related fatigue and anemia can mask early signs of AML, leading to potential delays in diagnosis. Choice of treatment are conditioned by several factors, including the gestational age at diagnosis, the clinical and biological disease characteristics, and the potential drug toxicity on mother and child. Treatment during the second and third trimesters resulted in fewer fetal complications than the first trimester.

Case Presentation

A 30-year-old Caucasian woman presented to the emergency department of tertiary academic center in iran, in November 2024. Her chief complaint was lethargy, nausea, vomiting and paleness with past medical history of hypothyroidism at 18 weeks gestation. Her complete blood count showed elevated WBC 16.2/ ul, hemoglobin of 9.3 g/dl and thrombocytopenia of 31200/ul. Due to bicytopenia a peripheral blood smear was done that showed schistocytes and blasts. The bone marrow aspirate demonstrated a diagnosis of AML. The blast population compromised 15% of cellular elements with auer rods. She were counseled regarding the diagnosis and wished to proceed with the pregnancy. She received standard dose induction chemotherapy with daunorubicin and cytarabine and at day +28 her bone marrow aspirate demonstrate 8% blast with auer rods. At 23 weeks gestation the reinduction regimen cytarabine 170 mg for 7 days and danourobicin 100 mg for 3 days were administered and due to higher risk of cardiovascular complication the patient undergone cardiac evaluation and echocardiography before and after chemotherapy administration. Again at day +28 after reinduction regimen BMA showed 6 % blasts. Our patient had no fever no mucositis and no episode of diarrhea and no abnormal sonography findings throughout her course of treatment given patient state she was discharged with plan of elective cesarean section on 36 week gestation.

Conclusion

Due to thrombocytopenia of 46000 , She was induced at 33 weeks gestation and delivered a morphologically normal female in good health weighing 1.750 kg. She is planned to proceed for hematopeitic stem cell transplantation. Throughout pregnancy, her care was managed by a multidisciplinary team which included neonatology, maternal fetal medicine, oncology and pharmacotherapy specialist. Management of leukemia in pregnancy remains a challenge and necessitate multidisciplinary approach and involves consideration of the nature of the disease, the phase of the leukemia, the inevitability for intervention, and a careful evaluation of maternal and fetal risk.

In most cases leukemias presenting in the first trimester, termination of pregnancy is often advisable. For leukemias with a more indolent course and for those diagnosed later in pregnancy, treatment can be adjusted to provide the most favorable outcome.

Article Number: 142

Impact of Clinical Pharmacist Discharge Medication Reconciliation Service on Detecting and Managing Drug-Related Problems in an Academic Medical Centre in Tehran

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Introduction
A drug-related problem (DRP) was defined by the Pharmaceutical Care Network Europe (PCNE) as an event or circumstance involving drug therapy that actually or potentially interferes with desired health outcomes". The most prevalent DRPs include inappropriate drug prescriptions, prescription errors, poor treatment adherence, and improper use of the dosage form. Approximately 20-72% of these discrepancies occur during hospitalization. This study aims to evaluate the impact of clinical pharmacist medication reconciliation in identifying and managing DRPs in hospitalized patients.

Materials & Methods
Clinical pharmacist evaluated both the medications prescribed at discharge and those used by patients prior to hospitalization. Based on the patient's condition and comorbidities, medications were assessed in terms of indication, dosage, duration, administration route, and drug interactions. A revised medication plan was developed, and the final medication list, along with instructions on usage, frequency, and potential adverse effects, was provided to the patient or caregiver both verbally and in written form. Data such as gender, age, diagnosis, and presence DRPs were recorded. Pharmacist interventions, including drug changes, additions, or adjustments in dosage or frequency, were documented.

Results
Among 1,494 patients admitted to various hospital wards (Neurosurgery, Surgery, CCU, Oncology, Post-CCU, Internal Medicine, and Radiotherapy), 880 (58.9%) were male and 614 (41.1%) were female, with a mean age of 53.05 ± 16.742 years. A total of 1851 DRPs were detected, with the most common DRP related to inappropriate drug indications. On average, patients had 1.24 ± 1.575 DRPs per patient, which 25% were critical and the highest DRP rates observed in neurosurgery and surgery wards.

Conclusion
Overall, statistical analysis indicated that in average all patients had at least one DRP. A significant correlation between DRP occurrence and as age, gender, and hospital ward were identified. High prevalence of DRPs also showed necessitate of effective strategies to prevent and manage them, especially those with critical impacts on health.

Article Number: 97

Efficacy of an Oral Suspension of Melatonin on Idiopathic Nocturnal Irritability in Infants Over 6 Months

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Introduction

A baby's night waking is largely due to his need to feed every few hours, but many babies wake too much at night. A child's sleep problems can be very frustrating as parents experience chaos and difficulty in their daily lives. Also, not having enough and quality sleep in mothers causes fatigue, dysfunction of the family and also problems in their mental health such as depression and anxiety. Melatonin is a hormone released in the body in response to reduced light and regulates the sleep/wake cycle. Infants who have trouble sleeping are thought to have low melatonin levels. Therefore, adding melatonin may help them sleep.

Materials & Methods

The study design is based on a randomized, semi-experimental clinical trial. Based on the entry criteria, the patients were randomly entered into two groups, case and control, with a sample size of 30 people in each group. The case group was given melatonin at a dose of 0.1 mg/kg, which is an oral product suitable for infants (suspension). It was formulated with a concentration of 1 mg/ml in this design and was given to a placebo control group with a similar appearance. People who entered the study using the 5 indicators of restlessness/insomnia of the Brief Infant Sleep Questionnaire (the Persian version of which has already been standardized by Khaksar et al. in terms of validity and reliability) during two occasions (before the start of the study and 14 the day after using melatonin oral suspension) were measured.

Results

67 infants with insomnia and restlessness were included in the study based on the desired criteria, of which 6 in the control group and 1 in the treatment group did not continue the product. The remaining 60 patients who completed the study correctly were evaluated. and according to the results, the number of times the child wakes up during the night and the time required for the child to fall asleep and the total time the child is awake during the night has decreased and the longest time the child sleeps during the night and the total time The child's sleeping during the night has increased, unlike the control group, which did not have a significant difference.

Conclusion

The consumption of melatonin product can be effective as an auxiliary treatment in controlling insomnia and nighttime restlessness of infants. It is suggested to use this product for the auxiliary treatment of insomnia and idiopathic nocturnal restlessness in infants.

Article Number: 28

Ghost Pharmacists

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Introduction

The history of pharmacy in Iran dates back to ancient times, as referenced in various sections of the Avesta. During the Sassanid era, Jundi Shapur was a prominent center of pharmacy. During the Safavid era, the Darulfonoon institution laid the groundwork for the golden age of pharmacy in Iran. Ethics in pharmacy was primarily based on religious teachings and behavioral patterns of scholars until then. Still, nowadays, professional ethics encompass a set of ethical standards that individuals in the profession must adhere to.

Materials & Methods

This field study aimed to address ethical issues in the field of pharmacy

Results

Unfortunately, we are witnessing a growing commercial focus on patients in the healthcare sector today, while the priority should be the benefits of the patients. Due to the commercial nature of pharmacies, pharmacists often find themselves in situations of conflict of interest and are compelled to prioritize sales. With investors entering the pharmaceutical market and essentially employing pharmacists, this valuable profession is facing numerous challenges. On the one hand, with the increase in university capacities, job-related issues in this field have also become prominent. Relentless pressure from pharmacy owners on pharmacists to increase sales, drug hoarding, and collusion with some physicians have effectively turned pharmacists into shadows in pharmacies. In contrast, the real pharmacists are the ones working behind the scenes! These are issues that all of us, whether as members of the healthcare system or as patients, face on a daily basis.

Conclusion

Silencing the dark corners of the drug market can cause irreparable harm to patients' health and make the path of black-market dealers smoother.

Article Number: 188

The Shadow Pandemic: Self-Medication and Mental Health Challenges Among COVID-19 Recoverees in Isfahan, Iran

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Introduction

This study investigates the prevalence of psychological disorders and self-medication (SM) practices among individuals recovering from COVID-19 in Isfahan, Iran.

Materials & Methods

A descriptive, cross-sectional, analytical design was employed, surveying 384 patients visiting teaching pharmacies between 2022 and 2023. Participants completed questionnaires assessing depression, anxiety, and stress (DASS-21, PHQ-9) and their self-medication behaviors.

Results

Results indicated a high rate of SM (97.3%) and significant levels of depression (49%), anxiety (45.6%), and stress (54.4%). The mean scores for depression, anxiety, and stress based on DASS-21 were 5 (SD = 0.4), 4.7 (SD = 0.58), and 6.8 (SD = 0.46) respectively. Common self-medications included analgesics, vitamins, herbal remedies, and, concerning, prescription drugs like alprazolam and SSRIs. Motivations for SM included prior experience, perceived cost savings, and fear of infection, with the internet serving as a primary information source. Females reported significantly higher levels of depression than males ($p = 0.04$).

Conclusion

These findings highlight the need for targeted interventions addressing mental health issues, promoting responsible medication use, and combating misinformation in the post-COVID-19 era.

Article Number: 53

The Prevalence of Long QT Syndrome and Associated Risk Factors, with a Focus on Medications in Patients Presented to Shahid Chamran Heart Hospital in Isfahan

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Introduction
Long QT Syndrome (LQTS) is a disorder of ventricular repolarization characterized by a prolonged QT interval on the electrocardiogram (ECG). LQTS is also associated with an increased risk of life-threatening polymorphic ventricular arrhythmias, such as Torsades de Pointes (TdP). Given the importance of understanding the prevalence of LQTS and its associated risk factors in patients with cardiovascular disease, we conducted a study to investigate these aspects, with particular attention to medication use, in patients who presented to Shahid Chamran Heart Hospital in Isfahan.
Materials & Methods
All patients over 18 years of age who visited the emergency department of Shahid Chamran Heart Hospital during the second half of the year 1400 (Persian calendar) were included. Upon arrival, all patients were evaluated, and relevant information was extracted from their medical records, including drug history. Additionally, a 12-lead ECG was obtained at admission, and the QT interval was measured using leads V2 or V3. The QT interval was determined using the Linear Hodges formula in accordance with the 2009 AHA/ACCF/HRS guidelines. To identify medications associated with QT prolongation, we referred to the AZCERT database.
Results
A total of 371 individuals were included in the study, of whom 64 (17.3%) met the criteria for LQTS. Among these 64 patients, 27 (42.1%) were taking QT-prolonging medications. The most commonly prescribed QT-prolonging drugs were amiodarone (9.4%) and mexiletine (12.5%). Furthermore, 11 (17.2%) of these 27 patients were using more than one QT-prolonging medication concurrently. Data analysis revealed a significant association between ischemic heart disease (IHD), ejection fraction (EF), and the use of QT-prolonging medications with the occurrence of LQTS.
Conclusion
The prevalence of LQTS observed in this study is slightly higher than reported in other studies, which may be attributed to the selection of a cardiac patient population. The findings underscore the importance of medications as a key risk factor for LQTS. This is particularly significant because, in many cases, simply changing or discontinuing a QT-prolonging medication can markedly reduce the risk of developing LQTS and its severe complications.
Article Number: 210

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Adiponectin and Paraoxonase-1 Correlation With Thrombolysis in Myocardial Infarction Frame Count with Coronary Slow Flow Phenomenon

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Introduction
Coronary slow flow phenomenon (CSFP) is an important angiographic entity, with no clear-cut etiology. The effects of adiponectin (APN) and paraoxonase-1 (PON-1) have been proven in microvascular disease pathophysiology, endothelial dysfunction and atherosclerosis. The present study aimed to determine the correlation between APN and PON-1 and CSFP.
Materials & Methods
Subjects who were undergone coronary angiography and met the inclusion and exclusion criteria were included in this study. The study subjects were divided into the following groups: 40 subjects without coronary artery disease (CAD) and CSFP, 22 patients without CAD but with CSFP, 29 patients with CAD < 50% and without CSFP, 22 patients with CAD (50-90%) but without CSFP and 16 patients with CAD and CSFP. Coronary flow rates of the participants with slow flow diagnosis were determined by thrombolysis in myocardial infarction (TIMI) frame count method. The serum levels of APN and PON-1 were measured by ELISA kit.
Results
There were no significant differences between groups in serum levels of APN. No significant correlation was observed between APN serum concentration and corrected TIMI frame count (TFC) (r=0.17, P=0.29). The PON-1 serum concentration in patients with CAD (50-90%) and without CSFP was significantly lower than the other groups (P<0.01). There was a near significant correlation between PON-1 serum levels and corrected TFC in left anterior descending coronary artery (r=0.32, P=0.08).
Conclusion
The present study has demonstrated no significant correlation between the serum concentration of APN and PON-1 and corrected TFC, so we need more extensive studies in this regard with larger sample size.
Article Number: 24

Cost-effectiveness Evaluation of Regorafenib in 3rd and 4th Line and Immunotherapy Agents in Patients with Metastatic Colorectal Cancer in Iran

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Introduction

Metastatic colorectal cancer is one of the most common types of cancer worldwide, including in Iran, and its high prevalence imposes a significant economic burden on the country's healthcare system. Among the targeted therapies for patients with MSI-H/dMMR mutations are immunotherapy drugs such as pembrolizumab and nivolumab, which have recently been considered as first-line treatments due to a significant increase in patient survival. Additionally, regorafenib and trifluridine/tipiracil have been as treatment options for patients who have failed two lines of therapy.Regarding the medications in this study, trifluridine/tipiracil and nivolumab are still available only as single prescriptions, while regorafenib and pembrolizumab are included in the Iranian drug list. The aim of this study is to provide optimized first-line, third-line, and fourth-line treatments by considering the effectiveness of each of these drugs as well as their costs.

Materials & Methods

Initially, a systematic review of the studies was conducted to extract the effectiveness and safety of the mentioned drugs.Databases including Scopus, PubMed, Web of Science, Embase, and Cochrane were systematically searched, and the results related to efficacy charts, including Overall Survival (OS) and Progression-Free Survival (PFS), were utilized. To obtain the costs associated with each event, consultations were held with clinical specialists, and relevant guidelines and studies were also reviewed. The PartSA model was used for economic analysis. For the first line (immunotherapy), the time horizon for Nivolumab and Pembrolizumab was set at 132 and 264 months, respectively, with the baseline utility rates for patients being 0.7825 for progression-free survival and 0.64 for post progression, and a discount rate of 5.8% for costs and 5% for utility was considered. Furthermore, for the second line and beyond, the efficacy rates for progression-free survival and post progression for Regorafenib and Trifluridine/Tipiracil were set at 0.73 and 0.59, respectively, with the discount rates for costs and efficacy being the same as in the first line. The duration of survival for patients receiving second-line and subsequent medications was set at 35 months for the time horizon. Finally, for both lines, one-way, two-way, and probabilistic sensitivity analyses were conducted.

Results

After conducting a systematic review for the first line, a randomized clinical study was found for each of the drugs, and the effectiveness results in terms of quality of life were calculated as 2.967 years for Pembrolizumab and 1.565 years for Nivolumab, with the annual costs for each being 23,255,935,118 Rials and 29,224,601,486 Rials, respectively. Regarding the second line and beyond, the effectiveness in terms of quality of life was found to be 0.584 years for Regorafenib and 0.527 years for Trifluridine/Tipiracil, with the annual costs for each being 6,474,061,883 Rials and 10,419,017,315 Rials, respectively.

Conclusion

By merging the results of cost and effectiveness, the incremental cost-effectiveness ratio for pembrolizumab and nivolumab was -4,257,006,716, with average cost-effectiveness ratios of 7,838,198,560 and 18,686,646,300, respectively. Given that the cost amounts exceed the willingness to pay of 1,206,690,000 rials, neither of these two drugs is considered cost-effective from an economic perspective. However, based on sensitivity analysis, in 99% of cases, pembrolizumab is more cost-effective than nivolumab. Regarding the subsequent line for regorafenib and trifluridine/tipiracil, the incremental cost-effectiveness ratio was -69,760,532,568, with average cost-effectiveness ratios of 11,085,722,402 and 19,770,431,338, respectively. In this line as well, neither of the drugs is cost-effective, but in 99% of cases, regorafenib is more cost-effective.

Article Number: 127

AHCC and Its Potential Effects on Cancer: A Review of Immunomodulatory and Therapeutic Properties

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Introduction

Active Hexose Correlated Compound (AHCC), a bioactive extract derived from cultured Lentinula edodes mycelia, has emerged as a complementary therapy in oncology due to its purported immunomodulatory and chemoprotective properties. This review synthesizes evidence from preclinical and clinical studies to evaluate the potential of AHCC to enhance immune function, reduce chemotherapy-related toxicity, and improve clinical outcomes in cancer patients.

Materials & Methods

A systematic review of peer-reviewed studies from PubMed was conducted, focusing on articles published between 2000 and 2025. Keywords included "AHCC," "cancer," "immunotherapy," and "chemotherapy." Inclusion criteria encompassed human trials, safety studies, and investigations into AHCC's mechanisms. Ten studies were analyzed, including randomized controlled trials (RCTs), observational studies, and phase I safety trials. Outcomes assessed included immune biomarkers (e.g., NK cell activity, HHV-6 DNA levels), survival rates, chemotherapy tolerance, and recurrence prevention.

Results

AHCC demonstrates immunomodulatory effects, enhancing NK cell activity and dendritic cell maturation in healthy individuals and cancer patients. Clinical studies suggest it can reduce HHV-6 viral load in advanced cancer patients. In hepatocellular carcinoma, AHCC was associated with extended median survival and lower recurrence rates post-surgery. While it did not significantly alter CD4+/CD8+ T-cell ratios in ovarian cancer, it increased CD8+ levels during later chemotherapy cycles. AHCC improved chemotherapy tolerance, reducing neutropenia, G-CSF requirements, and chemotherapy-induced nausea/vomiting, though it exacerbated muscle pain. It prevented gemcitabine-induced CRP elevation and albumin decline in pancreatic cancer patients. However, AHCC showed no benefit in reducing PSA levels in early prostate cancer. Phase I trials confirm its safety at doses up to 9 g/day, with no severe adverse events reported.

Conclusion

AHCC demonstrates promise as an adjunct therapy in oncology, offering immunostimulatory benefits, improved chemotherapy tolerance, and potential survival advantages in liver cancer. Its ability to reduce recurrence post-surgery and stabilize immune biomarkers underscores its multifaceted role. While existing evidence supports its safety and efficacy, larger RCTs are needed to validate these findings and standardize protocols. AHCC represents a viable complementary approach to enhance cancer care, though further research is critical to define its optimal clinical application.

Article Number: 146

Efficacy of Bromelain and Curcumin Combination as an Add-on Therapy in Outpatients with Knee Osteoarthritis: A Randomized Clinical Trial

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Introduction

Knee osteoarthritis (KOA) is a degenerative joint disease with significant morbidity, and current treatments like nonsteroidal anti-inflammatory drugs (NSAIDs) often pose risks of adverse effects. Bromelain and curcumin exhibit anti-inflammatory and analgesic properties, but their combined efficacy in KOA remains understudied. This trial evaluated the safety and effectiveness of a bromelain-curcumin supplement as adjunctive therapy in KOA patients.

Materials & Methods

A randomized, double-blind, controlled trial was conducted with 60 KOA outpatients (Kellgren-Lawrence grade ≥2). Participants were allocated (1:1:1) to three groups: Group 1 received celecoxib 200 mg/day plus bromelain-curcumin (150 mg bromelain + 300 mg curcuminoids twice daily), Group 2 received celecoxib 200 mg/day alone, and Group 3 received celecoxib 200 mg twice daily. Outcomes were assessed at baseline, 2 weeks, and 4 weeks using the WOMAC index and VAS for pain. Statistical analysis employed repeated-measures ANOVA with Bonferroni correction.

Results

Group 1 demonstrated significantly greater improvement in WOMAC scores compared to Group 2 at week 2 (-7.15 ± 2.94 vs. -4.80 ± 1.94, $p = 0.0025$) and week 4 (-16.05 ± 5.95 vs. -9.55 ± 3.05, $p = 0.0006$). Pain reduction (VAS) was also marginally superior in Group 1 (2.2 ± 1.20 vs. 2.4 ± 1.27 at week 4), though not statistically significant. Group 3 (high-dose celecoxib) showed the greatest symptom improvement, but Group 1's results suggest the supplement may reduce reliance on higher NSAID doses. No severe adverse effects were reported, and adherence was high.

Conclusion

The bromelain-curcumin combination as an add-on therapy to celecoxib significantly improved KOA symptoms compared to low-dose celecoxib alone, with comparable safety. These findings support its potential to minimize NSAID-related risks while enhancing therapeutic outcomes. Larger, long-term studies are warranted to confirm these benefits.

Article Number: 128

Perioperative Use of Pregabalin vs. Duloxetine for Pain Management of Knee Fracture Surgery: A Double-Blind Randomized Clinical Trial

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Introduction

Effective postoperative pain management, particularly in orthopedic procedures, is challenging. There is growing evidence regarding the benefits of multimodal analgesia, such as gabapentinoids and serotonin norepinephrine reuptake inhibitors to minimize opioid consumption while effectively managing pain. However, the gold-standard treatment is not described.This study intends to compare the efficacy of duloxetine and pregabalin within a multimodal analgesic plan in managing postoperative pain and their opioid sparing effects following knee fracture surgery.

Materials & Methods

In this double-blind randomized clinical trial, 54 patients undergoing knee fracture surgery, were randomized to receive 75 mg oral pregabalin or 30 mg duloxetine twice daily, from at least 24 hours prior to surgery up to 48 hours post operation. The severity of pain was assessed at the time of admission and 6, 12, 24, and 48 hours following the operation. If the patient was reporting a pain score of more than six on a numeric rating scale (NRS), intramuscular morphine was administered. In addition to pain assessment, the total opioid dose and any associated complications and drug adverse effects were monitored within the first 48 hours post-surgery.

Results

Despite the absence of a statistically significant difference between the duloxetine and pregabalin groups at each time point, the amount of pain reduction at the 48-hour mark from any given time point was pronounced in the duloxetine group compared to the pregabalin group. The duloxetine group received higher doses of morphine on the first day compared to the pregabalin group (3.96 ± 3.20 mg and 2.14 ± 2.72 mg, p = 0.022), however, opioid rescue in the second day was required in three patients in pregabalin group but no patient in duloxetine group. No clinically significant adverse effect was observed in both groups.

Conclusion

Duloxetine 60 mg per day serves as an equally effective perioperative alternative to pregabalin 150 mg per day, resulting in a small increase in rescue opioid administration with equivalent analgesic efficacy during the first 24 hours postoperatively, however demonstrating notable analgesic outcomes with no increased need for opioids within 24 to 48 hours.

Article Number: 220

Pantoprazole Drug Utility Evaluation in Oral and Intravenous Dosage Form in Nephrology, Hematology and N-ICUs in Dr. SHEIKH Children's Medical Center in Iran, Mashhad

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Introduction
This study aimed to demonstrate the importance of prescribing the appropriate dosage form as part of the treatment process to reduce patient and hospital costs without compromising the effectiveness of pantoprazole in the prophylaxis of upper gastrointestinal bleeding in hospitalized children.
Materials & Methods
This cross-sectional observational study was conducted in Dr. Sheikh Children's Hospital from September 2023 to the end of March 2024. Patients admitted to the nephrology, hematology, and intensive care units within the age range of 1 month to 16 years were included in the study. Each patient's risk factors were categorized into severe-risk and moderate-risk factors, with severe-risk factors assigned 1 point and moderate-risk factors assigned 0.5 points. A total of 207 patients who received pantoprazole were evaluated, and those with a score of ≥1 was considered reasonable candidates for SRBM prophylaxis.
Results
The mean age of the patients was 4±6 years, with a range of 1 month to 16 years, and a non-normal age distribution was reported. There were 114 male cases (55%) and 91 female cases (45%). coagulopathy had the highest frequency with 57 cases (27%), while significant burns (> 20% TBSA) had the lowest frequency with 0 cases among severe-risk factors. Corticosteroid therapy had the highest frequency with 159 cases (76.8%), while chronic NSAID and anticoagulant/antiplatelet use each had the lowest frequency with 2 cases (9.6%) among Moderate-risk factors. Overall, 45 cases (21.7%) had no indication for pantoprazole prescription. The highest prescription errors were found in children over 6 years old. Out of 100 children over 6 years old, 16 were NPO, and 84 were PO. 82 patients received the medication intravenously, indicating that 66 patients over 6 years old (31.8%) could have taken the medication orally, but the prescribed dosage form was intravenous.
Conclusion
The rate of dosage form prescribing errors in this study was lower compared to similar studies, likely due to differences in the study population and increased physician sensitivity in prescribing for children. However, by modifying the prescribed dosage form in children over 6 years old, excess prescribing costs (approximately 22 million Iranian Rials in this study) can be saved on the health-care system. In this regard, the role of pharmacists can be utilized as a key element in the health-care system to reduce irrational prescription.
Article Number: 114

Evaluation of the Medication Reconciliation Process at the Beginning of Hospitalization in the Hematology-Oncology Department of Qaem Hospital, Hospital In Mashhad

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Introduction

Medication reconciliation is a formal process to prepare the most complete and accurate possible list of the patient's current medications and compare the list with the medications prescribed by the attending physician during hospitalization. The purpose of this study is to medication reconciliation and investigate its effect in identifying medication inconsistencies and determining the prevalence of differences between the patient's medication list before hospitalization and the medications prescribed for the patient in the hematology-oncology department of Ghaem Mashhad Hospital.

Materials & Methods

This cross-sectional study was conducted from February 2019 to December 2020 in the hematology-oncology department of Ghaem Hospital (AJ) in Mashhad. After receiving the approval of the ethics committee, 100 patients who met the inclusion criteria were included in the study. Inclusion criteria included having at least one underlying disease under drug therapy and taking at least two drugs at home. In the first 24 hours of hospitalization, patients were visited by a pharmacy student and the best possible drug history was taken from the patient. Then the prepared list was compared with the medication orders of the attending physician in the patient's file. The found drug inconsistencies were discussed with the medical staff within 24 hours and finally the fate of the drugs used at home was determined. Finally, by using SPSS v22 software, the prevalence of different types of drug inconsistencies and the relationship between types of inconsistencies and different variables were statistically analyzed.

Results

The average age of the studied population was 57.7±1.4 years, of which 46 were women and 54 were men. 81% of the patients had at least one underlying disease, of which 38% were taking at least one high-alert drug. 293 drugs were recorded in the study, 86 cases had inconsistencies, among which 4 cases were discontinued, 8 cases were continued with dose changes, and 74 cases were conscious discontinuation of the drug. The most drug inconsistencies were observed in the category of diabetes drugs, followed by cardiovascular drugs. According to the obtained results, age and gender had no significant relationship with the occurrence of drug incompatibility. On the other hand, a significant relationship was observed between the increase in the number of underlying diseases and the occurrence of medication inconsistency. Also, there was a significant relationship between the total number of medicines used by patients at home during the day and the occurrence of medication inconsistencies.

Conclusion

The results of the present study show that the prevalence of drug incompatibility among patients admitted to the hematology and oncology department of Qaim Hospital (AJ) is relatively low. Also, in our study, the highest rate of medication inconsistency was related to the conscious discontinuation of medication. The results of the present study show that there is a significant relationship between the number of underlying diseases of patients and the total number of drugs used by patients with the incidence of drug incompatibility. Overall, the results of the present study confirm the occurrence of medication errors during hospital admission and show that the medication reconciliation process has a high potential to identify all types of inconsistencies and medication errors related to medication use among hospitalized patients.

Article Number: 112

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نقش آنتی بوتیک های جدید در درمان نمونی ناشی از ونتیلاتور(VAP)

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مقدمه

امروزه عفونت های ناشی از بیمارستان به یکی از چالش های مهم حوزه پزشکی تبدیل شده است و دشواری های ایجاد شده در ارتباط با مقاومت دارویی به صورت روز افزون در حال گسترش میباشد. در این بین نمونی ناشی از ونتیلاتور از اهمیت بیشتری برخوردار می باشد زیرا نرخ مرگ و میر بالایی دارد. دارو درمانی چنین بیمارانی عموما همراه با تجویز آخرین خطوط درمانی می باشد از این رو آگاهی از جدید ترین ترکیبات دارویی و آنتی بیوتیک های مورد استفاده از اهمیت ویژه ای برخوردار می باشد. لذا با توجه به آخرین مقالات منتشرشده در این حوزه، به معرفی و بررسی اجمالی یکی از مهم ترین ترکیبات می پردازیم.

مواد و روش ها

در این مطالعه مروری به دنبال جدید ترین درمان ارائه شده برای نمونی ناشی از ونتیلاتور بودیم لذا در پایگاه های داده مانند PUBMED و GOOGLE SCHOLAR اقدام به بررسی کرده و با جست و جوی کلید واژه هایی نظیر VAP TREATMENT-VAP MANAGEMENT -LATEST ANTIBIOTICS FOR VAP-NOVEL THERAPIES VAP مقالات مدنظر را استخراج کردیم.

نتایج

در کارآزمایی انجام شده، اقدام به مقایسه نسل جدید و قدیم آنتی‌بیوتیک‌ها به عنوان درمان خط اول کردند. نماینده نسل قدیم،کولیستین و نسل جدید، سفیدرکول بود.نخست این نکات را در رابطه با سفیدرکل بیان کنیم که این دارو، نسل جدید خانواده سفالوسپورین‌ها بوده و با توجه به ساختارش به تمامی کلاس‌های بتالاکتاماز مقاوم است. این دارو در سال۲۰۲۰ تاییدیه FDA را برای درمانVAPدریافت کرد. در این کارآزمایی که بر روی بیماران مبتلا به اسینتوباکتربومانی مقاوم به کارباپنم صورت گرفت، دو رژیم تعریف شد. رژیم اول برپایه کولیستین(۴.۵میلیون IUهر ۱۲ ساعت) و رژیم دوم برپایه سفیدرکول (۲گرم هر هشت ساعت) شکل گرفت. در مواردی که درمان خط اول ناموفق بود، به دارو های فوق آنتی‌بیوتیکی دیگر می‌افزودند. همراه کولیستین عموما، تیگه‌سیکلین و همراه با سفیدرکول، فسفومایسین تجویز می شد. نتایج به دست آمده از این کارآزمایی بالینی به این صورت بود که نرخ درمان تک دارویی برای سفیدروکول ۴۷.۵ درصد بود در حالی که در گروه کولیستین تمام بیماران نیازمند درمان چند دارویی بودند. همچنین نرخ مرگ و میر هم در گروه سفیدرکول ۱۰درصد و در گروه کولیستین ۳۸ درصد اندازه گیری شد.

نتیجه گیری

تمامی این نتایج نشان میدهد که نیازمند حرکت به سمت آنتی بیوتیک های جدید تر میباشیم تا بتوان بر مقاومت دارویی غلبه کرد. سفیدروکول یکی از این داروها می باشد. ترکیبات جدید تری مانند ceftazidime-avibactam و meropenem-vaborbactam و بسیاری از ترکیبات دیگر که دارای اثرات مثبت نسبت به دارو های های قدیمی میباشند میتوانند درصد موفقیت درمان را بالا ببرند لذا نیازمند ایجاد آگاهی کامل نسبت به این داروها میباشیم تا بتوانیم در آینده به بهترین شکل از این ترکیبات بهره ببریم.

Article Number: 179

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Evaluation of Rational Prescription of the Drug Colistin in the Medical Departments of Imam Reza Mashhad Hospital

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Introduction

Colistin is an old-generation antibiotic recognized as a last-line treatment for infections caused by Gram-negative bacteria that are resistant to other antibiotics. With the rise of antibiotic resistance, the use of colistin in hospitals has increased to combat serious infections such as those caused by Pseudomonas, Klebsiella and Acinetobacter species. Because of its significant adverse effects, the need for precise dosage adjustments, and its high efficacy in treating resistant infections, colistin should only be prescribed based on appropriate indications. This study aimed to evaluate the rational prescription of colistin in the treatment wards of Imam Reza Hospital in Mashhad.

Materials & Methods

This cross-sectional study was conducted from October 2022 to October 2023 on 679 hospitalized patients in the treatment wards of Imam Reza Hospital who received colistin. Patient demographics, details of prescribed medications, laboratory findings, and indicators of disease progression-including culture results, follow-up cultures, patient response to treatment, colistin doses administered, and drug related adverse effects were documented. The collected data were analyzed using SPSS version 26 with various statistical tests to assess prescribing errors related to indications, dosage accuracy, duration of treatment, dose changes, adverse drug reactions, and prevalence of antibiotic resistance among patients.

Results

The study results showed that the burn unit and intensive care unit accounted for the highest number of patients treated with colistin (25.6%). Of the patients studied, 35.5% received empiric colistin therapy. In addition, 183 patients underwent dose changes or were recommended for dose changes by the Drug Utilization Evaluation (DUE) department during the course of treatment. Of the 523 patients who underwent at least one culture test, 426 (81.4%) were classified as multidrug-resistant (MDR) or extensively drug-resistant (XDR).

Conclusion

The findings highlight the prevalence of colistin prescription errors in the treatment wards of Imam Reza Hospital. Enhanced education and monitoring programs are needed to ensure appropriate and effective use of colistin. Implementation of these strategies will optimize patient outcomes while reducing healthcare costs. In addition, these interventions will play a critical role in mitigating the rapid emergence of antibiotic resistance.

Article Number: 41

Analysis of Dose-Calculation and Chemotherapy Prescription Errors in the Outpatient Chemotherapy Unit at Seyed Al-Shohada Hospital, Isfahan

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Introduction

Medication mishaps and under-reported prescribing errors are major contributors to patient harm and increased mortality. In oncology, the precise dosing and scheduling of chemotherapeutic agents are critical: even small deviations can compromise treatment effectiveness or provoke serious adverse events. This study investigates how closely physicians in our outpatient chemotherapy clinic adhere to established protocols when selecting drug regimens, calculating doses, and ordering supportive medications tailored to each patient's cancer type, body characteristics, and side-effect profile.

Materials & Methods

Over a six-month period, we reviewed the records of 201 adult patients treated in the outpatient chemotherapy department of Seyed Al-Shohada Hospital. Using a structured checklist, we extracted demographic data, laboratory values, past medication history, the prescribed chemotherapy drugs (including dose and administration schedule), as well as orders for pre-medications and supportive therapies. Each prescription was then compared against national and international guidelines. All deviations were tallied and expressed as frequencies and percentages.

Results

Across 201 patients, we identified 327 prescribing errors. Sixty-five percent of patients were female, and the average age was 49.2 ± 2.8 years. Gastrointestinal and breast malignancies were the most common diagnoses. The largest category of error accounting for 67.3 % of total errors involved incorrect orders for pre-medications used to prevent chemotherapy-induced nausea and vomiting. Mistakes in selecting the type or volume of intravenous fluids represented 20.2 % of errors, while improper dose adjustments for chemotherapeutic agents comprised 10.4 %.

Conclusion

Despite operating within a university affiliated teaching hospital, our outpatient chemotherapy unit demonstrated significant lapses in guideline adherence for both dosing calculations and pre-medication protocols. Contributing factors likely include insufficient attention to patients' changing body weights and prior side effect histories, compounded by high patient volumes and a limited number of prescribing physicians. These findings underscore the need for targeted interventions such as dose calculation checklists, electronic order entry safeguards, and ongoing staff education to reduce chemotherapy prescribing errors and enhance patient safety.

Article Number: 61

Efficacy of an Arginine-Releasing Chitosan Nanofiber Gel in Promoting Healing of Diabetic Foot Ulcers: A Randomized Controlled Trial

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Introduction
Diabetic foot ulcers (DFUs) are a serious complication of diabetes that can lead to infection, hospitalization, and even amputation. Chitosan—a biocompatible, biodegradable polymer—has demonstrated wound-healing and antimicrobial properties when used in dressings, while arginine, a key amino acid, supports tissue repair by enhancing collagen synthesis and blood vessel formation. This study aimed to compare the healing effects of a novel topical gel composed of arginine-releasing chitosan nanofibers against a standard advanced foam dressing in patients with DFUs.

Materials & Methods
In this randomized, controlled clinical trial, adults with grade 1 or grade 2 DFUs were assigned to one of two groups: the intervention arm (n = 25), which received the arginine-chitosan nanofiber gel, and the control arm (n = 31), which received Sorbact® Foam Gentle Border. Dressings were changed every other day for 14 days, alongside identical standard wound-care protocols. Wound area measurements were taken at baseline, day 7, and day 14. The primary outcomes were percentage reduction in ulcer size and the proportion of ulcers achieving at least a 90% decrease in area by day 14.

Results
Both treatment groups experienced significant reductions in mean wound size at days 7 and 14 compared with baseline ($p < 0.001$). The average percentage decrease in ulcer area was similar between the chitosan-arginine gel and foam-dressing groups at both time points. By the end of the study, 36% of patients in the intervention group and 22.6% in the control group had achieved ≥ 90% healing; this difference did not reach statistical significance ($P = 0.269$).

Conclusion
Application of an arginine-releasing chitosan nanofiber gel was associated with rapid wound contraction and healthy granulation tissue formation, comparable to a leading foam dressing over a 14-day period. Although complete-healing rates were not significantly different, the favorable trends suggest potential benefits of this gel formulation in DFU management. Larger, longer-term studies are warranted to confirm these findings and to evaluate impacts on patient-centered outcomes and cost-effectiveness.

Article Number: 60

Assessing the Impact of Remdesivir: A study on COVID-19 Treatment Patterns in Iranian Hospitals

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Introduction
Remdesivir was the first antiviral granted emergency use authorization by the FDA for treating COVID-19, attracting widespread attention across healthcare systems globally. In Iran, the pandemic's successive waves, low vaccination coverage, and high clinical demand contributed to significant shortages of the drug. These challenges highlighted the need to investigate real-world prescribing practices and patterns of remdesivir use.
Materials & Methods
This cross-sectional, descriptive-analytical study was conducted at Al-Zahra Hospital over a six-month period from March to September 2021. The study included hospitalized patients aged 18 years and older who were prescribed remdesivir. Data were collected using a standardized form covering demographic information, clinical diagnosis, comorbidities, prescribing details (indication, dosage, duration), concurrent therapies, imaging results, respiratory support, laboratory parameters, adverse effects, and outcomes. Prescribing appropriateness was evaluated based on WHO guidelines and national treatment protocols, which recommend remdesivir for confirmed COVID-19 patients requiring respiratory support.
Results
A total of 107 patients were enrolled (55 females, 52 males; mean age 62.1 years). COVID-19 was the primary diagnosis in 88 patients and the final diagnosis in 91; 68 out of 84 patients tested positive via PCR. Appropriate indications for remdesivir were observed in 61.7% of cases. Notably, 13 deaths occurred in patients who met treatment criteria, compared to one death in those with inappropriate use (P = 0.01). Nearly half (48.6%) of the patients received remdesivir for fewer than six days. Eleven patients with a creatinine clearance below 30 mL/min received the drug, contrary to manufacturer guidance. Corticosteroids were co-administered in 88.9% of patients.
Conclusion
The findings emphasize the importance of strict adherence to clinical guidelines, appropriate patient selection, and careful monitoring to improve therapeutic outcomes in COVID-19 treatment. Further research with larger, more heterogeneous populations is warranted to refine treatment protocols and enhance patient care during ongoing and future public health crises.
Article Number: 34

Nanocurcumin as a Prophylactic Intervention to Mitigate Paclitaxel-Induced Peripheral Neuropathy in Breast Cancer Patients: Evidence from a Randomized, Double-Blind, Placebo-Controlled Clinical trial

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Introduction

Chemotherapy-induced peripheral neuropathy (CIPN) is a common and often debilitating side effect linked to the use of paclitaxel in breast cancer treatment. Despite its effectiveness as a key component of breast cancer therapy due to its strong anti-cancer properties, paclitaxel's use can be complicated by CIPN. This adverse effect not only negatively impacts the patient's quality of life but may also lead to necessary dose adjustments or even the discontinuation of treatment. Given these challenges, there is an urgent need to investigate effective preventive measures. Nanocurcumin, a nano-formulated version of curcumin known for its anti-inflammatory and antioxidant benefits, is emerging as a promising option to help mitigate the onset of neuropathic symptoms. This study aims to assess the effectiveness of nanocurcumin in preventing the onset and progression of paclitaxel-induced peripheral neuropathy in breast cancer patients.

Materials & Methods

A rigorous randomized, double-blind, placebo-controlled clinical trial was conducted involving 80 patients diagnosed with non-metastatic breast cancer who had previously completed anthracycline and paclitaxel-based chemotherapy regimens. Participants were carefully screened and enrolled before being assigned into one of two groups through block randomization: one group received nanocurcumin (administered at a dose of 40 mg twice daily) and the other group received a matched placebo. The primary outcome was the severity of CIPN, which was evaluated using three established and validated assessment tools: the Neuropathy Disability Score (NDS), the Neuropathy Symptom Score (NSS), and the Michigan Neuropathy Screening Instrument (MNSI). Additionally, nerve conduction studies were performed as an objective measure to identify and confirm large fiber neuropathy. Assessments were systematically carried out at the fourth and eighth weeks of the study, providing both short- and medium-term insights into neuropathy progression. Compliance with the study regimen was stringently monitored via pill counts and daily patient logs, while any adverse events were documented and graded according to the Common Terminology Criteria for Adverse Events (CTCAE v 5.0). Data analysis was performed using SPSS version 23, employing appropriate statistical tests to compare group means and evaluate temporal changes, with the significance threshold set at $p < 0.05$.

Results

Sixty patients completed the study (32 in the placebo group and 28 in the nanocurcumin group), and it was shown that nanocurcumin can improve peripheral neuropathy indices (NDS, NSS, and MNSI) in patients undergoing paclitaxel treatment. Despite significant differences in these indices between the groups, no significant difference in the incidence of large fiber neuropathy between the two groups was observed based on nerve conduction study data. Additionally, no difference in treatment response was found between the two groups (RECIST criteria). No adverse events leading to treatment discontinuation were observed in either group. Based on the NSS and MNSI questionnaires, nanocurcumin was able to reduce side effects such as fatigue and muscle cramps.

Conclusion

The study suggests that nanocurcumin could serve as an effective prophylactic agent against paclitaxel-induced peripheral neuropathy in breast cancer patients. By significantly improving neuropathy indices and reducing the burden of associated symptoms without compromising safety, nanocurcumin represents a promising adjunctive therapy in the clinical management of chemotherapy-induced side effects. Continued research with larger cohorts and longer follow-up periods is essential to validate these findings and refine the therapeutic regimen for broader clinical application.

Article Number: 32

Efficacy of 10% Pentoxifylline Topical Gel in Promoting Healing of Pressure Ulcers: A Randomized Controlled Trial

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Introduction

Pressure ulcers are a great concern with the pain they put patients through, the infections they may cause, longer hospitalizations, and decreased quality of life. These wounds are found to be very common in both health settings and the community at large, and they often progress to a chronic state that is hard to manage and easily recurrent after initial healing. The aim of this study was to evaluate the efficacy of topically applied 10% pentoxifylline gel in the healing of pressure ulcers.

Materials & Methods

The study was conducted as a randomized controlled trial at Al-Zahra Hospital in Isfahan, Iran, through the years of 1400-1401. A total of seventy patients with grade 2 and 3 pressure ulcers were studied. A topical 10% pentoxifylline gel was formulated and evaluated for physicochemical characteristics. The treatment group (n = 35) received daily applications of the gel, while the control group (n = 35) underwent standard dressing changes as performed in the hospital. In addition to dressing changes, all patients in both groups underwent debridement and received saline washes daily along with antibiotic treatment. Treatment and assessment were done over a period of 14 days with the degree of wound size reduction calculated as follows:

Percentage of reduction in ulcer size = [(initial size – final size) ÷ initial size] × 100.

Results

Baseline demographic characteristics such as sex, age, underlying health conditions, medications, wound grading, and initial wound size were comparable between both groups. At day 14, however, the treatment group had a significant decrease in the size of the wound (83.66±23.014) compared to the control (64.70±27.30) (P-value <0.026). Also, more cases of total wound healing were reported in the treatment group.

Conclusion

From this study's findings, it can be suggested that a 10% pentoxifylline topical gel is an effective treatment option in improving wound healing among pressure ulcer patients.

Article Number: 26

A Review of Published Cases Regarding the Amphotericin B Deoxycholate Overdose in the Pediatric Population and a Case Report

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Introduction

Considering the fact that two available and commonly used formulations of amphotericin B could be used instead of each other by mistake. Also, an updated and comprehensive data regarding management of this medication error was not available; the current review was conducted to gather available data among the pediatric population and discuss management and outcome of patients in case such an error occurs.

Materials & Methods

We review all the cases of amphotericin B overdose which reported in PubMed and google scholar so far then discuss an 8-years-old girl diagnosed with Ewing sarcoma who inadvertently received five times more than therapeutic dose of amphotericin B deoxycholate (5mg/kg/day).

Results

In total, ten of the cases were exactly matched to our purpose of the study. In our case, fluid and electrolyte management was aggressively undertaken and she was put under cardiac monitoring for 7 days following detection of the medication error. Finally, she was discharged from hospital with stable condition.

Conclusion

Reviewed data in this manuscript showed that amphotericin B deoxycholate overdose could cause severe complications and lead to cardiotoxicity, electrolyte imbalance and death. Aggressive cardiac, fluid and electrolyte monitoring and management of any problem as soon as they were detected was the pathway followed by the authors of this review and others who faced this medication error. The role of NAC and hydrocortisone in the managing amphotericin B deoxycholate overdose requires further investigation.

Article Number: 8

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چهاردهمین همایش داروسازی بالینی ایران

بررسی دانش، نگرش و عملکرد زنان باردار در مصرف داروهای گیاهی مؤثر بر سیستم گوارشی

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مقدمه

دوران بارداری با تغییرات فیزیولوژیک و هورمونی گسترده‌ای همراه است که زمینه ساز بروز علائمی مانند تهوع، استفراغ، رفلاکس معده، یبوست و دیگر اختلالات گوارشی می‌باشد. مصرف داروهای گیاهی به عنوان روشی مکمل و نسبتاً ایمن از سوی بسیاری از زنان باردار مورد توجه قرار گرفته است. هدف این مطالعه، ارزیابی سطح دانش، نگرش و عملکرد زنان باردار نسبت به مصرف داروهای گیاهی مؤثر بر سیستم گوارش و شناسایی عوامل تأثیرگذار بر این سه مؤلفه بود.

مواد و روش‌ها

این مطالعه به روش توصیفی–مقطعی روی ۳۸۴ زن باردار مراجعه‌کننده به مطب‌های زنان در شهر تهران طی سال ۱۴۰۳ انجام شد.

نتایج

اکثر شرکت‌کنندگان نگرش مثبتی نسبت به مصرف داروهای گیاهی در دوران بارداری داشتند، اما سطح دانش علمی آن‌ها نسبت به اثرات، دوز مناسب، تداخلات دارویی و خطرات بالقوه، ناکافی بود. همچنین عملکرد آن‌ها در مصرف خودسرانه و بدون مشورت با کادر درمان نگران‌کننده به نظر رسید. متغیرهایی نظیر سطح تحصیلات، شغل، درآمد خانوار، سابقه مشکلات گوارشی و منبع دریافت اطلاعات تأثیر معناداری بر دانش و رفتار آنان داشتند.

نتیجه گیری

با وجود تمایل مثبت به مصرف فرآورده‌های گیاهی، آگاهی ناکافی و باورهای نادرست می‌تواند منجر به استفاده غیرایمن و بروز عوارض جدی در مادر و جنین گردد. یافته‌ها نشان داد نیاز به آموزش هدفمند، ارتقاء سواد سلامت دارویی و مشاوره حرفه‌ای برای بهبود تصمیم‌گیری دارویی زنان باردار وجود دارد. این مداخلات می‌توانند در کاهش مصرف خودسرانه داروهای گیاهی و افزایش ایمنی بارداری مؤثر واقع شوند.

Article Number: 167

Systematic Review of Economic Evaluations of Kidney Cancer Drugs Worldwide

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Introduction

There are an estimated 431,000 (approximately 3% of all cancers) annual incidences of kidney cancer (KC) worldwide in 2020 - also 41% of KC cases end in death, which has increased in the past decades, especially in North America and Europe. Significant advances have been made in the treatment of mRCC in recent years, including the development of multiple targeted drugs and immunotherapies such as sunitinib, sorafenib, pazopanib, pembrolizumab + axitinib or nivolumab and bevacizumab + interferon-α. In recent years, interferon-α has been replaced by tyrosine kinase inhibitors (TKIs), especially sunitinib and pazopanib, as standard first-line treatments for mRCC.

Materials & Methods

In accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement, this systematic review was conducted to identify and evaluate all published articles on various types of economic studies in the management of KC including economic burden, cost of treatment, cost-effectiveness and cost minimization. We conducted a literature search for published economic evaluations in PubMed, Scopus, Web of Science core collection and Google Scholar using predefined search strategies on 29 December 2023 without any time limit to find relevant records. The Checklist for Reporting of Consolidated Health Economic Evaluations (CHEERS 2022) was used to assess the quality of studies included in the systematic review. The quality of all included studies was measured by a CHEERS 24-item checklist.

Results

84 economic evaluations (76 full economic evaluations and eight partial evaluations) were included in the systematic review. Only seven studies (8.3%) included indirect costs in addition to direct medical costs. These studies, which develop economic evaluations from a societal perspective, provide a more accurate estimate of the costs of treatment and care and the socio-economic burden of RCC. Half of the studies included in the systematic review had sunitinib as one of the intervention or comparator arms. According to the data extracted from the studies, sunitinib has achieved different results in studies conducted in different countries and with different inputs into the model.

Conclusion

This study provides a comprehensive review of economic evaluations conducted on pharmacological and non-pharmacological interventions for RCC. The results of CEAs varied across settings and were highly dependent on the country in which the study was conducted and the introduction of new drugs or surgical technologies to the market. The most common treatment/comparison arm was sunitinib, which was the first-line drug as adjuvant or in mRCC patients. Sunitinib had the highest CE among the different pharmacological interventions, especially when compared with combination or targeted therapies.

Article Number: 174

Systematic Review Summary: Systemic Effects and Adverse Events of Botulinum Toxin Injections

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Introduction
Botulinum toxin (commonly known as Botox) is widely used in both therapeutic and aesthetic procedures. While it is generally considered safe when administered by trained professionals, systemic adverse events though rare have raised safety concerns. These effects may result from distant spread of the toxin or unintended systemic absorption. The aim of this study was to systematically review the literature on systemic adverse effects associated with botulinum toxin injections, including both therapeutic and cosmetic uses.
Methods
A comprehensive literature search was conducted in databases including PubMed, Embase, and Cochrane Library up to [insert date]. Inclusion criteria were clinical trials, observational studies, and case reports describing systemic complications following botulinum toxin injections. Articles not in English or with unclear systemic outcomes were excluded.
Results
Out of 103 identified studies, 52 met inclusion criteria. Reported systemic adverse effects included generalized muscle weakness, fatigue, dysphagia, flu-like symptoms, ptosis, and in rare cases, botulism-like syndrome. These effects were more commonly reported in therapeutic doses (e.g., for dystonia or spasticity) but were also seen occasionally in cosmetic applications. Risk factors for systemic effects included high doses, repeated injections, underlying neuromuscular disorders, and injection near highly vascularized areas.
Conclusion
Systemic side effects of botulinum toxin injections are uncommon but can be clinically significant. Physicians should be aware of potential systemic complications, especially in vulnerable populations. Risk mitigation strategies include dose limitation, careful injection technique, and patient education about warning signs.
Article Number: 239

Evaluating the Safety and Efficacy of N-Acetylcysteine Mouthwash on the Prevention of Mucositis in Patients Undergoing Hematopoietic Stem Cell Transplantation: A Double-Blind Randomized Controlled Trial

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Introduction

Hematopoietic stem cell transplantation (HSCT) is a life-saving treatment for various malignant and non-malignant conditions. However, it is frequently complicated by oral mucositis (OM), a painful and debilitating side effect that impairs nutrition, prolongs hospitalization, and increases infection risk. Although multiple agents have been proposed for its management, most offer only palliative relief. N-acetylcysteine (NAC), a known antioxidant, may reduce both the incidence and severity of OM.

Materials & Methods

This double-blind randomized controlled trial was conducted to evaluate the efficacy and safety of prophylactic NAC mouthwash in preventing OM among HSCT patients. Out of 100 initially enrolled patients, 14 were excluded during the study. The remaining 86 patients were randomized into two groups: 42 in the placebo group and 44 in the intervention group. NAC was administered at a total daily dose of 2400 mg, from the first day of the conditioning regimen through day +14 post-transplant or until engraftment. OM severity was assessed daily using the World Health Organization (WHO) oral toxicity scale, with grades 3 and 4 defined as severe mucositis. Safety was evaluated using the Naranjo adverse drug reaction probability scale.

Results

OM developed in 79% of patients overall. Severe mucositis (grade 3–4) occurred in 36% of patients in the placebo group and 23% in the NAC group. The incidence of OM was higher among allogeneic transplant recipients (87%) than autologous recipients (72%). No serious adverse events related to NAC were observed.

Conclusion

Prophylactic use of N-acetylcysteine mouthwash may reduce the incidence of severe oral mucositis in HSCT patients. The intervention was well-tolerated and demonstrated a favorable safety profile, with no significant side effects reported. These findings support its potential role in supportive care strategies for transplant recipients.

Article Number: 130

Evaluation of Medication Beliefs and Renal Function Indicators (Blood Urea Nitrogen, Serum Creatinine, Glomerular Filtration Rate) in Kidney Transplant Patients and associated factors

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Introduction

One of the most important treatment protocols after kidney transplantation to prevent transplant rejection is the use of immunosuppressive drugs in these patients. The drug belief of kidney transplant patients can affect adherence to the prescribed drug regimen and the success of kidney transplantation. Therefore, this study was designed and implemented with the aim of determining the level of drug belief in kidney transplant patients and its relationship with renal function indicators, demographic factors, and patients' drug and medical records.

Materials & Methods

This cross-sectional descriptive-analytical study with the ethics code IR.IAU.PS.REC.399.299 was conducted on 200 kidney transplant patients over the age of 16, referred to the Kidney Transplant Clinic of Dr. Labafinejad Hospital, who were treated with immunosuppressive drugs for at least 1 month in a non-probability manner. The patients' demographic information, drug records, and medical records were collected and recorded. The 10-item Beliefs about Medicines Questionnaire, designed by Horn and Weinman (1999), was used. Finally, SPSS software (version 22.0) was used to analyze the data

Results

In this study, 39% of women and 61% of men with an average age of 44 years were included in the study. The average score of the patients' total medication belief was 9.29 (out of a maximum of 20) and the scores of medication necessity and medication concern were 23.84 and 14.55 (out of a maximum of 25), respectively. Also, the results of the multivariate linear regression analysis showed that none of the studied factors had a significant relationship with medication belief. Regarding medication necessity, the three variables of daily doses of transplant drugs (inverse relationship), glomerular filtration rate (inverse relationship), and drug-food allergy (inverse relationship) remained in the final model (p=0.001). Regarding medication anxiety, only the marital status variable remained in the final model (p=0.03), so that married patients had more medication anxiety compared to single patients .

Conclusion

It can be said that considering the low level of medication beliefs of kidney transplant patients regardless of their sociodemographic characteristics or their drug-medical history, it is necessary to provide appropriate education and information to correct these patients' medication concerns and, as a result, increase their medication belief levels, directly focusing on medication adherence and ultimately their disease management.

Article Number: 225

Identifying Factors Related to Mortality of Hospitalized COVID-19 Patients Using Machine Learning Methods

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Introduction

The COVID-19 pandemic has placed immense pressure on healthcare systems, challenging clinicians to make fast, informed decisions with limited resources. Traditional statistical methods struggle to manage the complexity of electronic health records, often missing key mortality risk factors. This study uses machine learning techniques—Elastic Net and artificial neural networks—to build a predictive model for identifying high-risk hospitalized COVID-19 patients. The goal is to support earlier intervention and better resource allocation by providing accurate, data-driven mortality risk predictions.

Materials & Methods

Methodology: This study is based on a secondary analysis of a retrospective cohort of 706 COVID-19 patients hospitalized at Imam Reza Hospital, Tabriz, Iran, from March 2020 to November 2021. Data were extracted from clinical records and electronic health systems, covering 96 features including demographics, clinical symptoms, laboratory results, vital signs, comorbidities, and treatments. Standardized data collection procedures were followed, and missing data were handled using the MICE (Multiple Imputation by Chained Equations) method. Features with more than 20% missing data were excluded, and those with less were imputed. Elastic Net, a regularization technique combining LASSO and Ridge regression, was used to select the most relevant predictors of mortality. The model identified 26 key features, which were further narrowed down to 20 after correlation analysis and clinical validation. These features included age ≥60, CRP, urea, SPO2, and clinical conditions such as ARDS and sepsis. A feedforward artificial neural network with one hidden layer was built using these predictors. The model's performance was optimized using 10-fold cross-validation and evaluated based on the area under the ROC curve (AUC), achieving high predictive accuracy. The training set addressed Class imbalance with random oversampling to ensure robustness.

Results

Out of 96 initial features, Elastic Net selected 26 predictors, later refined to 20 based on correlation and clinical relevance. These included age ≥60, CRP, urea, SPO2, ARDS, sepsis, and ventilatory support. An artificial neural network (ANN) model using these features achieved excellent predictive performance: AUC of 98.8%, accuracy of 97.14%, sensitivity of 98.04%, and specificity of 94.74%. ARDS and urea were among the most important predictors. The model effectively distinguished between survivors and non-survivors, highlighting its potential for early risk stratification in hospitalized COVID-19 patients.

Conclusion

This study developed a highly accurate mortality prediction model for hospitalized COVID-19 patients using Elastic Net and ANN. Key predictors included age, inflammatory markers, oxygen levels, and critical complications like ARDS and sepsis. The model enables early identification of high-risk patients, supporting better clinical decision-making and resource allocation. Unexpected associations with bromhexine and hydrocortisone highlight the need for further research. Overall, the approach demonstrates the value of machine learning in improving patient outcomes during the pandemic.

Article Number: 181

Enhancing Pharmacotherapy Education Through Game-Based Learning: A Study of Using Kahoot! Among Pharmacy Students

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Introduction

Pharmacy education is transitioning from traditional drug-focused roles to clinical responsibilities, necessitating updated pedagogical strategies. Identified gaps in Iranian pharmacy education include insufficient clinical skills and student motivation, highlighting the need for innovative methods like gamification. Global trends (e.g., ACPE recommendations) support gamification to bridge academic and practical competencies. We aimed to evaluate the effectiveness of Kahoot!, a gamified learning platform, in enhancing pharmacotherapy education by improving student engagement, knowledge retention, and motivation among pharmacy students in Iran.

Materials & Methods

An educational intervention was conducted over two academic semesters at Birjand School of Pharmacy, involving two cohorts of students across three pharmacotherapy courses. Kahoot! quizzes were implemented in approximately one-third of sessions. Final exam scores were compared between Kahoot! and non-Kahoot! sessions. Student satisfaction and learning skills were evaluated using a structured questionnaire and the standardized Learning Skills Inventory (SSI).

Results

Sessions incorporating Kahoot! showed higher average final exam scores compared to traditional sessions in Pharmacotherapy I and II. In Pharmacotherapy III, although the Kahoot! sessions also showed higher scores, the difference was not statistically significant. Kahoot! quiz scores were consistent with final exam outcomes, suggesting alignment between in-class engagement and overall performance. Most students reported Kahoot! as entertaining and helpful for focusing on key concepts. Over 70% felt it enhanced attention, and more than half found it motivating. The Learning Skills Inventory revealed moderate proficiency across domains, with higher performance in exam preparation and focus, and lower scores in note-taking and time management.

Conclusion

The integration of Kahoot! into pharmacotherapy education positively influenced student outcomes and engagement. Game-based learning platforms like Kahoot! can serve not only as effective teaching tools but also as indicators of academic readiness. Tailored, thoughtful implementation of such tools may enhance both educational impact and student satisfaction in pharmaceutical education.

Article Number: 183

Evaluation of Medication Adherence in Sickle Cell Anemia Patients Using Hydroxyurea: A Cross-Sectional Study

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Introduction

Sickle cell disease (SCD) is a multifaceted genetic disorder characterized by vaso-occlusive crises, hemolytic anemia, and an increased risk of early mortality. Hydroxyurea therapy has been shown to mitigate pain episodes and avert severe complications significantly; however, the drug's efficacy largely hinges on patients' adherence to the prescribed regimen. In resource-limited settings, adherence rates to hydroxyurea are frequently suboptimal. This study sought to evaluate the adherence levels among patients with sickle cell anemia in Hormozgan Province, along with the determinants influencing adherence to this critical treatment.

Materials & Methods

This cross-sectional study was conducted at Shahid Mohammadi Hospital in Bandar Abbas between August and September 2024 (Mordad to Shahrivar 1403 in the Iranian calendar). The study targeted patients diagnosed with sickle cell anemia who are currently being treated with hydroxyurea, all registered in the hospital's treatment database. Patient recruitment followed a census sampling approach, encompassing all individuals who fulfilled the inclusion criteria. Data collection involved structured questionnaires, which gathered detailed demographic information alongside adherence metrics using the Morisky Medication Adherence Scale-8 (MMAS-8). Statistical analysis of the data was performed utilizing SPSS version 20 software to interpret the findings effectively.

Results

In this study, we evaluated 151 patients diagnosed with sickle cell anemia, comprising 51% males and 49% females. Utilizing MMAS-8, the mean adherence score was determined to be 5.84 ± 1.09. The findings indicated that a significant portion of the cohort exhibited low medication adherence, with 52.3% falling into this category. Meanwhile, 47% were classified as having medium adherence, and only 0.7% demonstrated full adherence to their prescribed treatment regimen. Further analysis revealed that an average monthly income below 20 million Toman was significantly associated with adherence levels, as evidenced by the multivariate analysis results (Odd=-0.974, OR=0.388, p-value=0.043, 95% CI: 0.128-1.173). This suggests that income may be a critical factor influencing treatment adherence among this patient population.

Conclusion

This study highlights that adherence to therapeutic protocols in individuals with sickle cell anemia poses a considerable challenge. Enhancing adherence necessitates a multifaceted strategy that encompasses comprehensive patient education, the optimization of treatment regimens for simplicity, improved access to insurance coverage, and consideration of the patient's socioeconomic status.

Article Number: 110

Evaluation of Medication Adherence in Patients with Attention-Deficit/Hyperactivity Disorder (ADHD) Using Methylphenidate: A Cross-Sectional Study

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Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is among the most prevalent neurodevelopmental disorders, often emerging in childhood and potentially persisting into adulthood. This condition is marked by prominent symptoms of inattention, hyperactivity, and impulsivity, which can significantly impact academic performance, social relationships, and family dynamics. Methylphenidate is widely recognized as a first-line pharmacological treatment for managing ADHD. However, ensuring medication adherence can be quite challenging, particularly in chronic cases, and this adherence is crucial for the treatment's effectiveness. Our objective is to assess medication adherence in patients with Attention-Deficit/Hyperactivity Disorder (ADHD) who are prescribed Methylphenidate.

Materials & Methods

This research is a cross-sectional study conducted in 2024 (Persian calendar year 1403) in Hormozgan Province, Bandar Abbas city. The statistical population included patients with ADHD receiving methylphenidate, whose medication adherence was assessed using the 8-item Morisky Medication Adherence Scale (MMAS-8) standard questionnaire. Demographic information such as age, gender, education level, and insurance status were collected. The data were analyzed using appropriate statistical tests, and the relationship between demographic characteristics and treatment adherence was examined with IBM SPSS Statistics v16, with a significance level of $p < 0.05$.

Results

In this study of 129 patients with a mean age of 29, adherence to treatment varied, with only 12.4% showing complete adherence. Having insurance coverage was significantly associated with high adherence (OR=54.523, p<0.001). Conversely, drug, seasonal, and food sensitivities were linked to low adherence (OR=0.275, p=0.02). For male patients, high adherence was associated with not having underlying diseases (OR=0.061, p=0.014), insurance coverage (OR=651.639, p<0.001), and a monthly income up to 25 million Tomans (OR=0.135, p=0.05). For females, only having health insurance was significantly related to high adherence (OR=10.117, p<0.001).

Conclusion

This study emphasizes that maintaining adherence to treatment in patients with ADHD poses a significant challenge. To enhance adherence, it is essential to adopt a multifaceted approach that includes patient education and the development of simpler treatment regimens. Increasing awareness among patients and their families about the critical importance of consistent medication use, as well as the risks associated with non-adherence, is a vital initial step in this effort.

Article Number: 66

Personalized Medicine for Parkinson's Patients Using the Maximum Activation of Dopamine Producers in the Kidney and Extracting Dopamine.

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Introduction

Parkinson’s disease (PD) is a progressive neurodegenerative disorder marked by the degeneration of dopaminergic neurons in the substantia nigra, resulting in motor, cognitive, and psychological impairments. Despite the use of dopamine replacement therapies like levodopa, these treatments provide only short-term relief and are associated with diminishing efficacy and side effects over time. A novel approach to PD treatment focuses on utilizing renal epithelial cells, which can be engineered to produce dopamine. This personalized medicine strategy aims to harness the inherent potential of these cells to provide a sustainable and natural source of dopamine, reducing reliance on conventional therapies and potentially improving long-term treatment outcomes.

Materials & Methods

The study explores the use of CRISPR-Cas9 genome editing to enhance dopamine biosynthesis in renal epithelial cells. By modifying key enzymes involved in the dopamine production pathway, we achieved a 68% increase in dopamine output. The cells were further optimized with pharmacological stimulants such as dopamine D1 receptor agonists and essential cofactors like tetrahydrobiopterin (BH4), leading to enhanced production. The dopamine generated was encapsulated in cationic lipid nanocarriers to enable effective delivery across the blood-brain barrier (BBB). In animal models of Parkinson’s disease, the administration of these carriers resulted in a 49% improvement in motor function and a significant reduction in disease symptoms, as assessed using the Unified Parkinson’s Disease Rating Scale (UPDRS). Additionally, patient-specific kidney organoids derived from induced pluripotent stem cells (iPSCs) were developed as scalable models for dopamine production. These organoids demonstrated dopamine output comparable to that of natural kidneys, offering a viable platform for personalized treatments.

Results

The CRISPR-Cas9-enhanced renal epithelial cells demonstrated a 68% increase in dopamine production, with the addition of pharmacological stimulants further amplifying this output. The cationic lipid nanocarriers successfully facilitated the BBB crossing, allowing for targeted delivery of dopamine to the brain. In animal models, treatment led to a 49% improvement in motor function and symptom reduction. The kidney organoids produced dopamine levels comparable to natural kidneys, highlighting the potential for patient-specific therapies. Nanocoating and encapsulation technologies significantly improved the stability and delivery efficiency of dopamine, increasing effective brain delivery by 34%. Preliminary safety assessments showed fewer systemic side effects than traditional PD therapies.

Conclusion

This study demonstrates the potential of using genetically modified renal epithelial cells and kidney organoid systems for dopamine production in the treatment of Parkinson’s disease. By enhancing the natural production of dopamine and employing advanced delivery technologies, such as lipid nanocarriers, we offer a promising alternative to conventional therapies. While challenges related to large-scale dopamine production and long-term safety remain, the findings suggest that personalized medicine, tailored to individual patient needs, could revolutionize PD treatment, providing sustainable and more effective management options.

Article Number: 165

Designing a Disinfectant Formula for Eye Drops, Detergent, and Herbal Pain Reliever Using Special Extract (Non-Toxic) of Black Tea Plant and Black Date Kernel Liquid Extract

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Introduction

Nowadays, due to the industrial growth of countries, especially Middle Eastern countries, air pollution and its.negative effects have become one of the major concerns of society, and every day it causes more pathogenic effects on the sensory and respiratory organs of people. Doctors and pharmacists and researchers and Researchers are trying to find new and more effective methods and drugs and treatments for this, one of the negative effects that air pollution causes for humans are eye diseases and problems, including،Redness of the eyes ،Burning،Watery eyes،Eye cord secretions ،Itching ،Dryness and tingling sensation in the eyes ،Blurred vision and vision problems, watering and itching The effective treatment of doctors is to use sterile drops and eye washes to treat and heal these cases, which are mostly chemical and may have side effects over time. The design of a herbal drop that, in addition to washing and sterilizing the eyes, has pain-relieving properties is a solution that has been achieved after long research.

Materials & Methods

In order to perform this operation, we need extensive research to identify the most suitable plant and the most effective plant for this, which is extracted from scientific and globally approved sources, in addition, we need the science of pharmacy and the science of medicinal plants, extract extraction and pharmacopeia.

For this, after identifying the plant and extracting the desired extract with the desired
structure and chemical formula, the combination obtained from tea plants and
black date kernels along with dibasic sodium phosphate mono basic sodium phosphate sodium chloride sodium edetate benzalkonium chloride It is combined and finally, the output is a clear and colorless solution consisting of acidic alkaline basic structures suitable for eye pH and suitable saline phosphate, which is the result of using advanced extraction devices and laboratory testing. In the first stage, the database of artificial intelligence (AI)-based laboratories have been used to replace animal testing, which will reduce the harm caused by the dangers to animals and increase high-tech research services.

Results

The result shows that this drop prepared from tea tannin extract and black date kernel extract along with sodium and phosphate compounds will reduce eye pain and increase the moisture of the eyes with little harm. In addition, this drop is for eye diseases including the problems caused by According to the ongoing research, it is effective for lacrimal glands and eye thyroid and produces a suitable response for the patient.

Conclusion

According to the conducted research, the result of the experimental tests shows the 67% effectiveness of this drop to solve the mentioned problems, and also through the additional stages of the test and the final output, it can be concluded that it is possible to improve the effectiveness of the drug. This percentage can be close to 90% effective and also by examining other samples of herbal eye drops that are designed with other plants such as chamomile, we come to the conclusion that the resulting solution and the laboratory sample have high efficiency results. and also during Experiments and research have shown the effectiveness of this drop for the primary treatment of eye diseases, including lacrimal gland diseases and eye thyroid disease.

Article Number: 164

Prevalence and Risk Factors of Medication Errors in Enteral Tube Feeding Among ICU Patients: A Comprehensive Cross-Sectional Analysis

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Introduction

Most of the patients who are admitted to the intensive care unit (ICU) tract are forced to feed and use nutrition and medicine through an implanted tube. When administering medication through enteral feeding tubes, it is essential to Abs be cautious, as some drugs may not be suitable due to interactions with feeding formulas or adverse effects when crushed. Some errors during drug gavage can lead to feeding tube blockage, reduced drug effectiveness, or drug toxicity. This study aimed to assess medication errors (MEs) in ICU patients using enteral feeding tubes and identify factors that affect ME incidents.

Materials & Methods

This descriptive and analytical study was conducted for 9 months in the special care department of hospitals affiliated with Isfahan University of Medical Sciences. It involved 257 patients in the ICU receiving oral medication through an implanted gastric tube. The study assessed the method of oral drug administration, verified the correctness of drug prescriptions, investigated errors in drug provision and administration, and monitored patients for possible side effects of these errors. Demographic information and details about the prescribing physician and relevant nurses were also recorded.

Results

Our findings show that not washing the tube before gavage was the most frequent error (99.6%). However, different factors, whether the patient or the nurse, did not affect them. The other most common errors included mixing drugs simultaneously (75.6%) and not cleaning the tube after administering medication (78.6%). These errors were influenced by factors such as the number of drugs received by the patient, the hospital, and specific shifts.

Conclusion

In this study, we found that polypharmacy, the multiplicity of underlying diseases, and nurses' gender are the most critical factors that increase the number of MEs during the gavage of drugs in patients hospitalized in ICUs.

Article Number: 27

Identification and Resolution of Drug-Related Problems by Clinical Pharmacist Interventions in an Occupational Health Setting: A Study on Pharmacy Staff

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Introduction

Occupational health programs play a critical role in maintaining employee well-being, particularly for healthcare workers exposed to unique risks. Clinical pharmacists are well-positioned to address drug-related problems (DRPs) in these settings, yet their role in occupational health remains underexplored. This study assesses the frequency and resolution of DRPs following clinical pharmacist interventions among pharmacy staff in an occupational health setting.

Materials & Methods

This experimental study was conducted at the 13-Aban Pharmacotherapy Clinic of Tehran University of Medical Sciences, Tehran, Iran. Pharmacy staff with chronic diseases or abnormal test results were identified based on medical records. A single clinical pharmacist reviewed DRPs using the DOCUMENT classification system, provided interventions, and followed up. Recommendations were made directly to patients, and adherence to these recommendations was assessed. Data were analyzed using descriptive statistics and correlation tests.

Results

Among 601 medical records reviewed, 239 participants met inclusion criteria, and 139 attended pharmacotherapy visits. A total of 277 DRPs were identified, averaging 1.99 DRPs per patient. The most common DRPs were the need for preventative therapy (37.2%), untreated conditions (15.9%), and laboratory monitoring (14.8%). A total of 443 recommendations were provided to patients, with an adherence rate of 76.4%. Among those who fully adhered to the recommendations, 97.2% of DRPs were resolved. While adherence was initially higher among female participants, overall compliance rates did not significantly differ by gender.

Conclusion

Clinical pharmacist interventions effectively identified and addressed DRPs among pharmacy staff in an occupational health setting. Although this study did not directly measure broader health outcomes, the resolution of DRPs highlights the impact of pharmacist-led interventions on improving medication management. These findings underscore the importance of integrating clinical pharmacists into occupational health programs to enhance medication safety and optimize treatment adherence.

Article Number: 121

Study of the Knowledge, Attitude, and Practice of Physicians Regarding Preparation of Sterile Injectable Products in Hospitals

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Introduction
In hospitals, patients frequently receive compounded sterile injectable drugs, which must be prepared under aseptic and sterile conditions. Failure to adhere to clean room principles increases the likelihood of product contamination, subsequently increasing the rate of infection, morbidity and mortality of patients. Cooperation and belief of the health care team, especially physicians, in sterilization principles during the preparation of injectable solutions play a significant role in the implementation of these programs. The present study was designed and conducted to evaluate the current status of knowledge, attitude, and practice of specialist physicians regarding the preparation of sterile injectable hospital products.
Materials & Methods
The present study is a descriptive and analytical cross-sectional study conducted from February 2024 to September 2024. An information gathering form comprising two main sections: a) socio-demographic and professional information of the physicians, and b) questions/items designed to assess the knowledge, attitude, and practice of physicians regarding the study topic, was applied. The validity of the initially designed questionnaire was assessed using the Content Validity Ratio (CVR) and Content Validity Index (CVI), and its reliability was assessed using the Kuder-Richardson coefficient and Cronbach's alpha. The questionnaire was then standardized. For items to remain in the questionnaire, all of them should have a CVR above 0.75 and a CVI above 0.79, and the Richardson Coefficient and Cronbach's Alpha had to be above 0.70. Completion of the forms was carried out by visiting the physicians in person.
Results
Overall, 170 information gathering forms were delivered to physicians, of which 102 completed forms were received by the researcher. The gender distribution of the physicians included 62 females (60.78%) with a mean±sd age of 42.76±7.83 years and 40 males (39.22%) with a mean±sd age of 48.57±10.10 years. The knowledge score of the physicians participating in the study was 4.93±1.51 (out of 9), the attitude score was 24.83±4.84 (out of 32), and the total practice score was 15.42±6.58 (out of 24). A weak direct correlation was observed between knowledge and attitude ($p = 0.05$) and between attitude and practice ($p<0.001$). Furthermore, there was a significant direct relationship between attitude and being a faculty member ($p=0.011$), and between practice and work experience ($p=0.05$). 71% of the physicians identified pharmacists as qualified specialists for providing clean room services.
Conclusion
Planning for culture-building and appropriate training of healthcare staff to improve their awareness, attitudes, and behavioral skills regarding the preparation of injectable medications under sterile conditions and in clean rooms should be on the agenda of the Ministry of Health of Iran. Considering the appropriate basic knowledge and information of pharmacists, and given the recognition of the role of the pharmasits by medical community, pharmacists should be supported as the primary custodians for establishing and providing sterile injectable preparation and compounding services in hospital centers.
Article Number: 31

Dose-Dependent Hepato-Reproductive Toxicity of Methimazole: Evidence from a Fish-Based Toxicological Model

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Introduction

Methimazole, a thionamide antithyroid agent, is widely used in clinical settings, yet reports of its hepatic and reproductive toxicity are emerging. This study aimed to evaluate the dose-dependent hepatotoxic and endocrine-disrupting effects of methimazole using Trichogaster trichopterus as a toxicological model organism.

Materials & Methods

In a controlled in vivo experiment, adult female Trichogaster trichopterus were allocated into five groups and treated with intramuscular methimazole at doses of 0.025, 0.05, and 0.1 mg/kg every other day for 20 days. Two control groups received either saline or no injection. Hepatotoxicity was assessed via serum transaminase activity (AST, ALT), and reproductive toxicity was evaluated through gonadosomatic index (GSI), and levels of 17β-estradiol, testosterone, and 17-hydroxyprogesterone. Histopathological examinations of liver and ovarian tissues were conducted using light and electron microscopy. Data were statistically analyzed using ANOVA and non-parametric tests, with $p < 0.05$ considered significant.

Results

Methimazole induced a dose-dependent decline in GSI and sex hormones (17β-estradiol, testosterone, and 17-hydroxyprogesterone), indicating reproductive axis suppression. Concurrently, AST and ALT levels significantly increased at 0.05 and 0.1 mg/kg doses ($p < 0.05$), suggesting hepatocellular stress. Histopathology confirmed progressive hepatic degeneration, including hepatocyte hypertrophy, necrosis, and Kupffer cell activation. Ovarian tissue exhibited arrested oocyte development and disrupted membrane integrity at higher doses.

Conclusion

Methimazole exposure led to marked, dose-dependent hepato-reproductive toxicity, characterized by biochemical, hormonal, and histological disturbances. The observed elevation in liver enzymes, suppression of sex steroid hormones, and structural damage to hepatic and ovarian tissues collectively indicate significant organ-specific toxicity. These results emphasize the necessity of routine hepatic and reproductive monitoring during methimazole therapy, particularly in long-term use. Furthermore, T. trichopterus represents a reliable and translational in vivo model for preclinical toxicological evaluation of endocrine-disrupting compounds.

Article Number: 48

Comparison of Colistin-Doxycycline Versus Colistin-Meropenem in the Treatment of Multidrug-Resistant Gram-Negative Infections: A Controlled Clinical Trial

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Introduction
Multidrug-resistant (MDR) Acinetobacter baumannii and Klebsiella pneumoniae represent a critical therapeutic challenge due to limited antibiotic options and high mortality rates. Although colistin is a last-line antibiotic, its nephrotoxicity and emerging resistance restrict its utility. Doxycycline has shown synergistic effects with colistin in vitro, but limited clinical data exist. To evaluate the efficacy and safety of colistin-doxycycline combination therapy compared to colistin-meropenem in hospitalized patients with .confirmed MDR Gram-negative infections

Materials & Methods
A single-center, prospective controlled clinical trial was conducted at a Teaching Hospital (Tehran, Iran). Thirty-eight adult patients with culture-confirmed MDR infections caused by A. baumannii or K. pneumoniae were assigned to receive either colistin-doxycycline (n=23) or colistin-meropenem (n=15). Primary outcomes included clinical cure rate, microbiological eradication, and in-hospital mortality. Secondary outcomes assessed nephrotoxicity, systemic inflammatory markers, and need for mechanical ventilation. .Statistical comparisons were made using t-tests, chi-square tests, Kaplan-Meier analysis, and multivariate regression

Results
The colistin-doxycycline group demonstrated significantly higher clinical cure rates (87.0% vs. 46.7%, $p = 0.012$) and lower mortality (69.6% vs. 86.7%, $p = 0.017$) than the control group. Microbiological eradication was superior ($p = 0.016$), and a faster decline in CRP and WBC levels was observed ($p < 0.05$). Nephrotoxicity occurred less frequently in the doxycycline group (19.1% vs. 33.3%), though not statistically significant. The doxycycline group also had shorter durations of mechanical ventilation and .hospital stay among survivors

Conclusion
Colistin-doxycycline combination therapy showed improved clinical outcomes and a favorable safety profile compared to colistin-meropenem in MDR Gram-negative infections. These findings support its potential as an effective alternative regimen, particularly in resource-limited settings, and highlight the importance of synergistic antibiotic .combinations in combating antimicrobial resistance

Article Number: 47

Evaluation of the Effectiveness of Oral Formulation of Nano-Curcumin as an Adjuvant Treatment in Patients with Metastatic Colorectal Cancer Receiving CAPOX±Bevacizumab or mFOLFOX6±Bevacizumab Regimen: A Triple-Blind, Placebo-Control Randomized Clinical Trial

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Introduction

Objective: Globally, colorectal cancer ranks the second cause of mortality and the third most diagnosed cancer. The aim of the present study is to evaluate the effectiveness of oral formulation of nano curcumin as an adjuvant treatment in patients with metastatic colorectal cancer receiving the CAPOX/FOLFOX±Bevacizumab regimen and adverse effect (ADE) prevention.

Materials & Methods

Methodology: In this study, 84 patients with metastatic colorectal cancer who completed the inclusion and exclusion criteria were randomized into case and placebo groups. 40 mg nano curcumin capsules were administered three times a day after each meal, beginning the first day to the end of the sixth cycle of chemotherapy. To investigate ADE, the criteria of National Cancer Institute Common Terminology for Adverse Events (NCI-CTCAE) version 5 were evaluated after the third and sixth course along with chemotherapy dose adjustment at the end of these two cycles. Carcinoembryonic antigen (CEA) level and radiological response based on Response Evaluation Criteria in Solid Tumors (RECIST version 1.1) were also evaluated.

Results

Results: All baseline demographic, clinical, and laboratory variables were comparable between placebo and nano-curcumin groups. The administration of nano-curcumin showed no significant impact on carcinoembryonic antigen (CEA) levels. There was also no significant difference in both arms regarding RECIST criteria at the end of 3rd and 6th cycle. The CTCAE peripheral neuropathy score was significantly different between two groups at the end of 6th course (p=0.029) but not third course (p=0.157). No significant response was observed for neutropenia, anemia, thrombocytopenia, HFS, and diarrhea based on CTCAE scores at the end of both third (P=0.267, 0.258, 0.933, 0.377, 0.811, respectively) & 6th courses (p=0.456, 0.645, 0.772, 0.34, 0.114, respectively).

Conclusion

Conclusion: Our findings suggest that nano-curcumin with prescribed dose did not show considerable efficacy in radiologic response of the metastatic colorectal cancer based on RECIST criteria. CEA serum level also did not change significantly in comparison with the placebo. Nano-curcumin was in dose of 40 mg thrice daily was not effective in prevention of neuropathy, HFS and hematologic adverse reactions induced by CAPOX/FOLFOX-6 regimens. Further research with larger sample size on different nano-curcumin dosing schedules and using Electromyography (EMG) test and a Nerve Conduction Velocity (NCV) test for better assessment of neuropathy is suggested.

Article Number: 96

Efficacy of Teriparatide in Severe Hypocalcemia Resistant to Conventional Therapies: A Rare Case Report in Nikan Sepid Hospital

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Introduction

Hypocalcemia is a common complication following thyroidectomy, often managed effectively with calcium and vitamin D supplementation. However, in cases of severe, refractory hypocalcemia unresponsive to standard therapy, alternative treatments such as teriparatide (recombinant parathyroid hormone) may be required. This case report presents a patient with a history of cancer and total thyroidectomy who developed severe hypocalcemia resistant to intravenous and oral calcium, with symptom resolution only after teriparatide administration.

Case Presentation

A 38-year-old male patient with a history of lymphoma and total thyroidectomy presented with severe hypocalcemia (corrected serum calcium: 6.1 mg/dL) accompanied by neuromuscular irritability and paresthesia. Despite aggressive intravenous calcium gluconate and high-dose oral calcium/vitamin D therapy (IV: 3 g/day and Oral: 6.370g/day) and also calcitriol consumption (2 mcg/day), serum calcium levels remained suboptimal (corrected serum calcium: 7 mg/dL), and symptoms persisted. After failure of abovementioned therapies, subcutaneous teriparatide (20 Mcg twice daily) was initiated. Within four days, serum calcium levels reached to 8.6 mg/dL, and symptoms resolved completely. No adverse effects related to teriparatide were observed.

Conclusion

This case highlights the role of teriparatide as an effective treatment for refractory hypocalcemia in post-thyroidectomy patients, particularly when standard calcium and vitamin D regimens fail to correct the calcium level. Early consideration of teriparatide may prevent prolonged hypocalcemia-related complications in high-risk patients.

Article Number: 234

Study of patients' knowledge and practice in storing monoclonal antibody drugs at home

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Introduction

Biological drugs are complex protein-based products derived from living organisms or their derivatives, such as monoclonal antibodies. These agents are widely used in the prevention and treatment of various diseases, including autoimmune disorders and cancers. Improper storage or transportation can compromise the efficacy of biological drugs by causing loss of therapeutic activity, formation of protein aggregates, and increased immunogenicity. These issues may result in significant economic losses and adverse effects on patient health.

Materials & Methods

This prospective observational study enrolled 380 patients or their companions who visited selected pharmacies across different areas of Tehran to collect prescriptions containing monoclonal antibody-based medications. Data on demographic characteristics and the storage practices of biological drugs were collected using a structured questionnaire. The data were analyzed using the Mann-Whitney U test and Kruskal-Wallis test.

Results

Participants demonstrated relatively low knowledge scores (mean = 0.3725) compared to their performance scores in drug storage practices (mean = 3.787), indicating a notable gap between awareness and actual handling behavior. The study also investigated the influence of variables such as education level, duration of drug use, medication cost, and other factors on respondents' knowledge and performance levels.

Conclusion

The findings reveal a discrepancy between respondents' awareness and their actual practices regarding the proper storage of biological drugs, with knowledge levels being significantly lower than practical implementation. Factors such as education level, place of residence, duration of drug use, and medication-related costs were found to influence both knowledge and performance. Given the high sensitivity of biological drugs to improper storage conditions and the potential consequences for patient safety and treatment outcomes, improving awareness and education among patients and caregivers is crucial.

Article Number: 192

Assessment of Medication Adherence Using the SMAQ and CQR19 Questionnaires in Patients with Rheumatoid Arthritis

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Introduction

Rheumatoid arthritis (RA) is a chronic, progressive disease whose optimal management relies heavily on patients' adherence to long-term pharmacotherapy. Despite advances in disease-modifying antirheumatic drugs and biologic agents, non-adherence remains a barrier to therapeutic success, contributing to flares, joint damage, and increased healthcare utilization. This study compares two validated self-report tools—the Simplified Medication Adherence Questionnaire (SMAQ) and the 19-item Compliance Questionnaire in Rheumatology (CQR-19)—to evaluate adherence patterns in RA patients and identify associated determinants.

Materials & Methods

In this analytical, cross-sectional study, 180 adults with RA (≥3 months' diagnosis and treatment) were recruited via convenience sampling from the outpatient rheumatology clinic at Loghman Hakim Hospital over six months. Participants completed socio-demographic and clinical history forms alongside the SMAQ and CQR-19. SMAQ responses dichotomized adherence status (adherent vs. non-adherent), while CQR-19 generated a continuous score (0–100%). Data were analyzed in SPSS v26 using descriptive statistics, Mann–Whitney and independent-samples t-tests, Pearson correlation, and stepwise multivariate regression to explore concordance between tools and predictors of adherence.

Results

According to SMAQ, 128/180 patients (71.1%) were non-adherent. Mean CQR-19 score was 66.06 ± 9.34, with adherent patients (per SMAQ) scoring significantly higher than non-adherent counterparts (69.97 vs. 64.47; $p < 0.0001$). SMAQ and CQR-19 demonstrated strong agreement (Mann–Whitney $p < 0.0001$). Multivariate analysis identified older age, home ownership, and history of allergies as independent positive predictors of CQR-19 adherence scores ($p < 0.0001$, $r = 0.34$). These findings underscore the greater granularity of CQR-19 in quantifying adherence and highlight socioeconomic and clinical factors influencing compliance.

Conclusion

While both SMAQ and CQR-19 effectively detect non-adherence, the CQR-19 offers a more nuanced, continuous measure suited to RA populations. Tailored interventions should prioritize younger patients, those of lower socioeconomic status, and individuals with shorter disease durations to enhance adherence and optimize clinical outcomes.

Article Number: 189

Implementation the Electronic Medication Reconciliation System in Nikan Sepid Hospital: Issues and Challenges

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Introduction

Manual processes of medication reconciliation in patient admission, ICU transfer, and discharge often result in workflow delays, poor coordination among healthcare teams, and increased medication errors. Accurate medication reconciliation, particularly best possible medication history, is critical to ensure patient safety during these transitions. Integrated electronic systems have the potential to address these challenges by streamlining processes and improving interprofessional communication. An online system developed, to conducting medication reconciliation during patient admission, ICU-to-ward transfer, and discharge.

Materials & Methods

A multidisciplinary team, including IT specialists, physicians, nurses, and clinical pharmacists, collaborated to develop a web-based system facilitating electronic medication reconciliation. A two-month pilot study was conducted in selected hospital departments to assess system performance, documentation accuracy, and user satisfaction, with a particular focus on medication reconciliation processes and finally it employed to condition of all of the medication reconciliations.

Results

An online form which including demographic data, medication details (pharmaceutical dosage form, medication name, dosage, frequency of administration, and administration points) developed an uploaded to the hospital information system. The requests of medication reconciliation submitted by the responsible nurses and the pharmacists called by the online system. Then, the medication reconciliation process done by the pharmacist. During the study period (six months), 7711 admisstion medication reconciliation was done, 377 transfer medication reconciliation was done and finally 8545 discharge medication reconciliation was done.

Conclusion

The integrated electronic system demonstrated its effectiveness in enhancing the quality and efficiency of medication reconciliation while reducing medication errors through structured online processes. Expanding such systems in other healthcare settings and enhancing pharmacy-specific functionalities is recommended.

Article Number: 236

The Protective Effects of Protocatechuic Acid against Natural and Chemical Toxicants

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Introduction

Protocatechuic acid (PCA) is a water-soluble polyphenol compound, commonly found in fruits, herbal plants, and obtained by glucose fermentation. It has pharmacological benefits, including anti-inflammatory, antioxidant, anti-apoptosis, and antimicrobial properties (Semaming et al., 2015). PCA has also shown potential in preventing colon cancer cells in in vitro studies (Acquaviva et al., 2021). Dendrimers containing PCA have been used as nanocarriers for delivering anticancer drugs like doxorubicin (Xi et al., 2016). Additionally, PCA may help prevent or treat type 2 diabetes mellitus (DM) by reducing insulin resistance (Scazzocchio et al., 2015). This article reviews the protective effects of PCA against the toxicity of natural and synthetic agents, including drugs, fungal/bacterial toxins, and metals, and discusses the proposed mechanisms for reducing toxicity.

Materials & Methods

The scientific databases PubMed, Google Scholar, and Scopus were searched using the following keywords: "protocatechuic acid" AND "natural toxin" OR "chemical toxin" OR "neurotoxins" OR "cardiotoxins" OR "hepatotoxins" OR "nephrotoxins" AND "protection" or "prevention" or "treatment." First, broadly related keywords were selected to ensure that search results do not miss relevant titles. The most relevant papers were retrieved, and a second search was conducted with each yielded toxin name(s). We also reviewed all bibliographies to find relevant in vitro and in vivo studies published from inception to August 2023. Forty-nine studies were found about the protective effects of PCA against drug toxicity, metal toxicity, toxins, chemical toxicants, and some other miscellaneous toxicants. Only original articles were included. Review articles, duplicate, unrelated, and non-English language articles were excluded.

Results

Protocatechuic acid (PCA) is a polyphenol compound that is extracted from certain fruits and plants or obtained from glucose fermentation. Several in vivo and in vitro studies have determined that PCA has protective effects against the toxicity of natural and chemical toxicants. PCA indicates these protective effects by suppression of oxidative stress, inflammation, and apoptosis. PCA reduces reactive oxygen/nitrogen species (RONS) and enhances the level of antioxidant parameters mainly through the activation of the Nrf-2 signaling pathway. PCA also decreases the levels of inflammatory mediators via downregulating the TLR-4-mediated IKBKB/NF-κB and MAPK/Erk signaling pathways. In addition, PCA inhibits apoptosis by lowering the expression of Bax, caspase 3, and 9 along with enhancing the level of the anti-apoptotic protein Bcl-2. Further evaluation, especially in humans is necessary to confirm PCA as a potential therapeutic approach to intervene in such toxicities.

Conclusion

Long-term exposure to chemical agents can be toxic to humans. PCA, as a polyphenolic compound, has shown protective effects against the toxicity of pharmaceuticals, metals, fungal/bacterial toxins, and environmental chemicals. According to this review, PCA indicates a protective effect against hepatotoxicity, nephrotoxicity, and neurotoxicity caused by these toxicants, in particular by suppression of oxidative stress, inflammation, and apoptosis, improvement of histopathological and biochemical parameters, and enhancement of mitochondrial enzyme activities. Considering the significant benefits of PCA, consuming more products containing it in the diet may be a suitable way to use this valuable substance in the prevention and treatment of these toxicities in the future. However, further evaluation, especially in humans, is necessary to confirm PCA as a potential therapeutic approach to intervene in such toxicities.

Article Number: 185

Utilization of Serum Uric Acid to High-Density Lipoprotein Cholesterol Ratio as A Novel Inflammatory Marker in Cardio-Metabolic and Cardiovascular Disorders: An Overview of Clinical Findings with Bibliometric Analysis

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Introduction

Inflammation plays a significant role in the development and progression of various diseases, including autoimmune diseases, cardiovascular diseases (CVDs), obesity, diabetes (DM), hypertension (HTN), and cancers. In addition to conventional inflammatory markers, several new indices, such as the serum uric acid (UA) to high-density lipoprotein cholesterol (HDL-C) ratio, have been introduced as indicators of inflammation. UA is an end product of purine metabolism, and elevated serum UA is closely linked to metabolic disorders like gout, CVDs, dyslipidemia, DM, and HTN. HDL-C, known as "good" cholesterol, has anti-inflammatory and anti-oxidative properties. The UA/HDL-C ratio (UHR) has recently emerged as a novel marker of inflammation and metabolism, attracting attention due to its potential impact on disease development. This overview explores UHR's clinical value in cardio-metabolic disorders and CVDs and includes a bibliometric analysis of current research.

Materials & Methods

Serum uric acid (UA) to high-density lipoprotein cholesterol (HDL-C) ratio (UHR) has been recently introduced as a novel indicator of inflammatory status. However, there were no reviews summarizing the UHR applications. We performed an overview to summarize and assess the current literature to evaluate UHR clinical findings in cardio-metabolic and cardiovascular disorders. Methods: The PubMed, Google Scholar, and Web of Science databases were searched for related articles implemented on adults (age≥18) up to December 2023. The search terms used were "uric acid" OR "serum uric acid" OR "serum UA" AND "high density lipoprotein" OR "high density lipoprotein cholesterol" OR "HDL" OR "HDL-C" OR "HDL-cholesterol. The final articles were imported to SCImago Graphica and VOSviewer visualization software for bibliometric analysis.

A total of 27 eligible studies were enrolled. The diseases in which UHR was evaluated include non-alcoholic fatty liver disease (NAFLD), diabetes mellitus (DM), hypertension (HTN), and cardiovascular disease (CVD). We summarized the UHR's different attributes on the mentioned diseases and highlighted the promising findings and limitations. Bibliometric analysis showed that the most common disorder on which an investigation was performed was DM and insulin resistance (33.33%), followed by CVD (29.62%) and NAFLD (22.22%). Most of the participants were from China. Asia has published the most articles, with the superiority of China (11 publications) and Turkey (11 publications). It seems that UHR, as an underutilized marker, is associated with cardio-metabolic and CVD. However, more investigations are needed to determine the predictive value of UHR for the mentioned disorders.

Results

In this review, we examined the relationship between the uric acid to HDL-C ratio (UHR) and various clinical conditions as a novel inflammatory biomarker. UHR may offer new insights into metabolic and inflammatory status. Elevated UHR has been associated with disorders like CVDs, hypertension, T2DM, and NAFLD. While promising, more studies are needed to determine its predictive role and clinical application. Uric acid, a purine metabolism product, can induce oxidative stress via xanthine oxidase and activate inflammatory pathways such as NF-κB. It also impairs nitric oxide release, contributing to endothelial dysfunction. Meanwhile, HDL-C has both anti-inflammatory and pro-inflammatory roles, depending on physiological conditions. Under stress or inflammation, HDL-C function may shift unfavorably. Therefore, UHR could reflect the balance between pro- and anti-inflammatory states, making it a potential marker even when UA and HDL-C are within normal ranges.

Conclusion

UHR as a useful and easily available marker may contribute to developments in medical knowledge and clinical practice, independent of traditional risk factors. The coexistence of increased serum UA and decreased HDL-C has a synergistic effect and provides a better picture of risk stratification of inflammation and metabolic status. More investigations are needed to find the predictive value of UHR for cardio-metabolic and CVD.

Article Number: 184

The Effect of Supplementation with Saccharomyces Boulardii on Polycystic Ovary Syndrome: A Randomized, Double-Blind Clinical Trial

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Introduction

Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders in women of childbearing age, which may cause infertility. Probiotics may be effective in PCOS by affecting the gut microbiota. This study aimed to evaluate the effect of probiotic supplementation on metabolic parameters and androgen levels in women with PCOS.

Materials & Methods

This double-blind, randomized clinical trial was performed on 84 patients aged 18-45 years with PCOS. Patients were randomly allocated into two groups and received probiotics (Saccharomyces boulardii) or placebo for 3 months. Anthropometric indices (BMI, waist circumference, and abdominal circumference) were measured at baseline and after 12 weeks for all patients. In each group, fasting blood samples were collected before and at the end of the intervention to measure fasting blood sugar (FBS), dehydroepiandrosterone sulfate (DHEA-S), and testosterone level.

Results

Probiotic supplementation significantly decreased testosterone hormone level (P = 0.0029) and DHEA-S level (P = 0.0031) compared to the placebo group. No significant differences were observed in the BMI and FBS parameters between the two groups. Also, no statistically significant difference was observed in the placebo group in the intragroup analysis of BMI, FBS, testosterone, and DHEA-S levels before and after the intervention.

Conclusion

Overall, probiotic supplementation of Saccharomyces boulardii in PCOS women did not affect weight, BMI, or FBS but has reduced testosterone and DHEA-S levels. Therefore, Saccharomyces boulardii probiotics might be beneficial in the management of PCOS patients.

Article Number: 139

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A Model for Management of Pharmaceutical Supply Chain and Pharmacy Services in Hospitals

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Introduction

Medicine and pharmaceutical products are considered as the most important technologies and one of the main pillars in the communication link between patients and the health system. Thus, a correct management of this process lead to an optimal provision of the society's health. In addition, the complex nature of the country's pharmaceutical service chain has made its management challenging, requiring an effective set of strategies for its effective performance. Accordingly, the management of pharmaceutical services in hospital settings has been proposed as one of the fundamental processes in improving the performance indicators of healthcare facilities. Despite the importance of the subject, until now, few comprehensive studies in the field of pharmaceutical supply management has been done. This study aimed to explain the effective factors on the management of pharmaceutical services in hospital centers and their prioritization through the use of appropriate scientific methods.

Materials & Methods

This was a cross-sectional study which was conducted in the year 2021 using the Delphi and DEMATEL Fuzzy method. In order to identify the effective factors on the management of pharmaceutical services in hospital setting, literature review of scientific databases was done. Afterward, using the experts' opinions, the findings were summarized in the framework of an operational model to identify the main factors with the help of the fuzzy Delphi method, and using the fuzzy DEMATEL method.

Results

A total of 32 factors were identified in 7 dimensions of environmental, human resources, information technology, financial management, service management, waresquare management and quality management. According to the findings, environmental factors were identified as the most influential factor on the management of pharmaceutical services and in the second place, the human resources factor was determined as a crucial factor in pharmaceutical management of hospitals. The results also indicated that information technology was as a mediating variable which was influenced by environmental factors and human resources and directly affected the two factors of financial management and service management. Furthermore, due to the high influence of waresquare management on other factors, this variable, along with quality management, was both directly and indirectly affected by other factors as two dependent variables.

Conclusion

The most important factors included environmental factors and human resources, highlighting the demand for new technologies in the pharmaceutical field. In addition, educational needs assessment and continuous training based on the needs of employees were mentioned among other key elements that should be applied to achieve the necessary competencies and develop appropriate programs so as to improve the responsiveness of the pharmaceutical system of hospital settings. On the other hand, information management by emphasizing on the integration and sharing of information could reduce environmental uncertainties, improve financial management, quality of services, and customer satisfaction. In fact, depending on their effectiveness, these factors could be able to provide useful evidence for policy makers and managers of the country's health and pharmaceutical system.

Article Number: 124

On the Medication Reconciliation Service in Iran: A study at Nikan Hospital

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Introduction

The process of Medication Reconciliation, MR for short, is now a standard part of any Patient Treatment process in many countries. The WHO considers this as an act to address patient safety problems. As a part of `The High 5s Project of the WHO, the MR is now recommended with specific guidelines and algorithms to run the process.

Materials & Methods

We have conducted a meta-analysis of the service itself by introducing two related indices, namely the Pharmacist Intervention Index (PII) and Recommendation Rejection Index (RRI), that help to systematically measure some important aspects of the MR. This also measures the importance of the pharmacist's role within the interdisciplinary medical team.

Results

We have computed both indices, globally, for the Nikan hospital starting from 2022 till 2024. Higher PII indicates higher pharmacist intervention and safer care plan for the patients. As the number of pharmacist increases within the hospital over the years number of DRP forms and PII value has also increased, showing more detection of the problems and interventions of the pharmacist.

Conclusion

The steady growth of PII shows that MR service has been implemented successfully in Nikan Hospital and become an essential part of patients care plan. As a relatively new part of the interdisciplinary team, Satellite Pharmacists have gained trust and reliability by other members of the team as shown by the low value of RRI.

Article Number: 175

Evaluation of the Effect of the Oral Formulation Prepared from the Extract of Pomegranate for the Treatment of Benign Prostate Hyperplasia: A Triple-Blind Randomized Clinical Trial

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Introduction
Benign prostatic hyperplasia (BPH) is a common condition affecting older men, primarily driven by hormonal imbalances and inflammation. This study aimed to investigate the effects of pomegranate peel extract, rich in anti-inflammatory and antioxidant polyphenolic compounds like anthocyanins and tannins, on BPH symptoms compared to a placebo.

Materials & Methods
Forty patients aged 50-80 with mild to moderate BPH from Ghaem Hospital in Mashhad were randomly assigned to either the treatment or control group. The treatment group (20 patients) received 250 mg of pomegranate peel extract capsules three times daily alongside tamsulosin 0.4 mg nightly. In comparison, the control group (20 patients) received lactose capsules as a placebo plus tamsulosin 0.4 mg. The severity of lower urinary symptoms was assessed using the International Prostate Symptom Score (IPSS), along with prostate size via ultrasound and Prostate-specific antigen (PSA) serum levels, at baseline and after 2 and 4 months.

Results
Baseline prostate sizes and symptom scores were similar between groups ($P > 0.05$). At the 4-month follow-up, the pomegranate peel extract group demonstrated significantly lower symptom scores compared to the placebo group, although no differences were observed at the 2-month mark.

Conclusion
A daily regimen of 250 mg pomegranate peel extract for four months effectively alleviated BPH symptoms, as indicated by the IPSS. This suggests its potential as a treatment option for BPH, warranting further human studies to explore its efficacy.

Article Number: 10

بررسی اثرات درمانی و ضد التهابی کروسینا در بیماران مبتلا به استئوآرتریت زانو: یک کارآزمایی بالینی مولتی سنتر تصادفی دو سویه کور

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Introduction

Osteoarthritis is a common and debilitating joint disease, especially in the elderly and obese. Despite extensive research, existing treatments are still not fully effective, and new treatment options are needed. In this regard, crocin, the active compound of saffron, has been of interest due to its anti-inflammatory and pain-relieving properties. Therefore, the present study was designed to investigate the therapeutic and anti-inflammatory effects of crocin in patients with knee osteoarthritis.

Materials & Methods

Eligible patients were enrolled in the study after obtaining written informed consent and verification of eligibility by a rheumatologist. Patients were randomly divided into two groups of 24: Crocin and control; the Crocin group received 15 mg of the drug daily and the control group received placebo for 16 weeks. Also, all patients received 2 g of acetaminophen for pain control as needed and recorded its consumption. Blood samples were collected to measure inflammatory and anti-inflammatory mediators before and after treatment. Data were analyzed using SPSS26 software and Wilcoxon, Mann-Whitney, and repeated measures tests were used to compare the results between groups.

Results

The Krocina group showed a significant decrease in pain score on weeks 4, 7, and 16 compared to the placebo group ($P<0.05$). The WOMAC score in the Krocina group showed a significant increase at all measurement times ($P<0.05$), while changes in the placebo group were not significant. Inflammatory markers ESR and CRP showed a significant decrease in the Krocina group ($P = 0.032$ and $P = 0.001$, respectively), while they increased in the placebo group. IL-1 levels in the Krocina group decreased significantly ($P = 0.003$), and IL-10 levels increased significantly ($P = 0.030$). INFY showed a significant decrease in the Krocina group ($P = 0.007$) but no significant change in the placebo group. In the between-group comparison, ESR and CRP after the intervention were significantly lower in the Krocina group compared to the placebo group ($P = 0.006$ and $P = 0.019$, respectively).

Conclusion

This study showed that crocin has significant therapeutic and anti-inflammatory effects in patients with knee osteoarthritis. The significant reduction in pain, improved function, and reduced inflammatory markers in the crocin-treated group compared to the control group suggest the potential of this compound as a new and effective treatment option.

Article Number: 158

Evaluation of the Efficacy of Ginger Supplementation in Children with Juvenile Idiopathic Arthritis

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Introduction

Juvenile Idiopathic Arthritis (JIA) is an autoimmune joint disease and one of the most common chronic diseases in children. The hallmark manifestation of this disease is chronic inflammation of the synovial membrane, leading to stiffness, pain, and joint dysfunction. If left untreated, JIA can result in joint deformities and abnormalities in the bones surrounding the joints. Additionally, these children are at risk for uveitis and even blindness. Therefore, treatment for JIA is essential to prevent both intra-articular and extra-articular complications of the disease. The principles of JIA treatment include reducing inflammation, increasing joint function, and preventing joint deformities and other complications. Ginger belongs to the Zingiberaceae family, and most studies on ginger rhizome have confirmed its anti-inflammatory and antioxidant effects. This study investigated the effectiveness of ginger supplementation in pellet formulation for children with JIA.

Materials & Methods

This study was conducted as a randomized, triple-blind clinical trial involving children with JIA who were referred to the Rheumatology Clinic at Akbar Hospital in Mashhad. Initially, a hydroalcoholic extract of ginger was prepared, followed by the fabrication of ginger and placebo pellets using the extrusion-spheronization method. Subsequently, capsules containing the ginger pellets (standardized based on gingerol) and the placebo pellets were prepared. During the clinical phase, 20 patients in the ginger group and 20 patients in the placebo group received either ginger or placebo capsules twice daily for three months. All patients received standard treatment for JIA during the study. Patients were assessed for disease severity using the ACR-Pedi criteria at baseline, at the end of the first month, and at the end of the third month.

Results

In this study, patients receiving ginger had a mean age of 10 ± 2.91 years, while those receiving a placebo had a mean age of 10.65 ± 3.01 years. During the study, 10% of patients in the ginger group and 5% of patients in the placebo group experienced a skin rash. There was no significant difference in the incidence of side effects between the ginger and placebo groups (p-value = 0.548). At the end of the study, the number of patients in the ginger group who achieved positive ACR-Pedi-30, 50, 70, and 90 scores was significantly higher than the placebo group (p-value= <0.001).

Conclusion

Based on the clinical findings of this study and the absence of serious side effects associated with ginger supplementation, it appears that using ginger in children with JIA, in addition to standard treatment of disease, may accelerate the recovery process and reduce complications of the disease. However, further clinical studies are needed.

Article Number: 33

Clinical Investigation of Neuroprotective Effects of Melatonin on Patients with Acute Ischemic Stroke

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Introduction

Stroke is one of the leading causes of annual mortality and disability for many individuals worldwide. Ischemic stroke has a high incidence and mortality rate, which significantly affects the quality of life and places an overwhelming mental and financial burden on the patients' families. Melatonin has a neuroprotective effect on patients with acute ischemic stroke. This study aimed to develop the employment of melatonin on clinical features of acute ischemic stroke.

Materials & Methods

This double-blind, placebo-controlled clinical trial was conducted on 70 patients with acute ischemic stroke not eligible for reperfusion therapy who were admitted to Bu-Ali Hospital. The consent form was taken, and all of the patients received routine management. Participants were divided into two groups. The 35 patients received 10 mg of melatonin once daily for five days, and others received 10 mg of placebo. National Institute of Health Stroke Scale (NIHSS) and modified Rankin Scale (mRS) score were recorded for all patients before treatment and after on days 5, 30, and 90.

Results

The 70 patients included in this study based on inclusion criteria. The severity of stroke and the functional status of patients were compared in both groups. The melatonin group showed a significant reduction in the NIHSS score from day five up to day thirty compared to the placebo group ($P = 0.001$). There was no difference in the mRS score between the two groups in this study ($P > 0.05$). The relative frequency of the adverse event of sleepiness in patients receiving melatonin was significantly higher than in patients receiving placebo ($P= 0.022$).

Conclusion

Melatonin's anti-inflammatory and antioxidant properties make it a neuroprotective agent in post-stroke treatments. It reduces the NIHSS score and improves sensory and motor disabilities in patients with acute ischemic stroke.

Article Number: 4

N-Acetylcysteine for Chemoradiotherapy-Induced Oral Mucositis: A Narrative Review of Clinical Studies

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Introduction

Chemotherapy and radiotherapy, common cancer treatments, inhibit cancer cells through cytotoxicity but also affect healthy cells, leading to oral mucositis (OM). Reactive oxygen species contribute to tissue destruction and OM development. N-Acetylcysteine (NAC), an antioxidant, has been proposed to prevent and treat OM due to its ability to scavenge reactive oxygen species and protect cells from oxidative damage. This narrative review aims to summarize the clinical effects of NAC on OM and its impact on other oral tissues.

Materials & Methods

A comprehensive literature search was conducted to identify clinical studies evaluating the efficacy of NAC in preventing and treating chemoradiotherapy-induced OM. Studies published between January 2000 and December 2023 were included. Key outcomes assessed were the severity and duration of OM, as well as the overall clinical impact of NAC on oral health. Data were extracted and analyzed qualitatively due to the heterogeneity of study designs and outcome measures.

Results

The review included 12 clinical studies involving a total of 965 patients undergoing chemotherapy and/or radiotherapy. NAC was administered via oral, topical, and intravenous routes. In 10 of the studies, NAC significantly reduced the severity and duration of OM compared to controls ($P < 0.05$). Additionally, NAC showed potential benefits in reducing the incidence of intestinal mucositis and other oral tissue inflammations. However, variations in dosing regimens and administration routes limited the ability to determine the optimal protocol for NAC use.

Conclusion

NAC demonstrates potential in reducing the severity and duration of chemoradiotherapy-induced OM, suggesting a beneficial role in managing this common complication. Despite promising findings, further research is needed to establish the optimal dosing and administration protocols for NAC in OM management. This review highlights the necessity for standardized clinical trials to better understand NAC's therapeutic potential and implications for improving patient care in oncology settings.

Article Number: 119

The Effect of Lepidium Sativum on Female Sexual Dysfunction: A Double-Blind, Randomized, Placebo-Controlled Trial

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Introduction
Female sexual dysfunction is a serious complication with high prevalence and a challenging cure. Despite several synthetic and herbal medicines as treatments, the design and development of new remedies are still needed. Lepidium sativum is a plant from the Brassicaceae family, demonstrating beneficial sexual effects in several in vivo experiments. Our clinical trial was designed to determine the efficacy of the L. sativum hydroalcoholic extract in women with sexual disability according to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5).
Materials & Methods
Using a double-blind method, the women were randomly divided into the treatment group with 100 mg L. sativum (n=20) and the placebo group (n=20). Sex drive, orgasm satisfaction, sexual arousal, vaginal lubrication, and ability to reach orgasm were measured at baseline and after four weeks of intervention based on the Arizona Sexual Experience Scale (ASEX) questionnaire.
Results
Results showed significant improvement in satisfaction from orgasm (P = 0.001), vaginal lubrication (P = 0.011), and ability to reach orgasm (P = 0.003) and the total score (P = 0.003) in comparison with placebo but no significant improvement in sex drive (P = 0.076) and sex arousal (P = 0.183). It seems that L. sativum is effective in the improvement of women's sexual disorders.
Conclusion
In conclusion, our findings revealed that L. sativum extract could be effective in sexual performance enhancement and its different domains based on the questions of the ASEX questionnaire. Future trials with higher sample sizes and over a more extended period are suggested to investigate the safety and effect of different dosages of L. sativum by comparing or combining with placebo and/or other available treatments to prove its benefits or other possible advantages.
Article Number: 99

Economic Value and Clinical Benefits of Telepharmacy in Transplant Pharmacotherapy Clinic

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Introduction

Virtual pharmacotherapy clinics provide remote medication management for transplant patients, avoiding in-person visits. While beneficial for accessibility, their full clinical and economic impact remains unquantified. This study evaluates the effects of tele pharmacist interventions on medication safety and heal related costs in transplant care.

Materials & Methods

A prospective evaluation was conducted on transplant recipients receiving virtual pharmacotherapy consultations from October–December 2024. Comprehensive medication management included regimen optimization, adherence monitoring, and systematic resolution of drug-related problems (DRPs). Using expert clinical judgment, the likelihood of DRPs progressing to adverse drug events (ADEs) was estimated. Vaccination gaps were filled with the right vaccines. For economic analysis, the costs of the pharmacist service and added therapies were compared against savings from avoided infection-related complications, rejection-related admissions and reduced hospitalization probability.

Results

The study included 82 organ transplant recipients (50.8% male, mean age 50.9±11.5 years). Pharmacists identified 504 DRPs and issued 674 recommendations. Expert analysis classified 128 DRPs as preventable ADEs, with projected progression probabilities of 1% (n=26), 10% (n=31), 40% (n=33), and 60% (n=38). These interventions prevented an estimated 38 high-probability ADEs that could have triggered disease-related complications or hospitalization episodes. The economic evaluation revealed $142.80 indirect savings and $30,552.42 avoided costs, yielding a 10.52:1 cost-benefit ratio.

Conclusion

Virtual pharmacist interventions should be prioritized as a high-value healthcare innovation, simultaneously enhancing transplant care quality while delivering system-wide cost efficiencies, a critical advancement for resource-constrained settings managing complex medication regimens.

Article Number: 38

Potential Drug Interactions in Terminally-Ill Cancer Patients, a Report from the Middle East

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Introduction

This study aims to evaluate the epidemiology of potential drug interactions in terminally-ill cancer patients receiving exclusively supportive care.

Materials & Methods

In this cross-sectional study, during a 6-month follow-up, we considered the medical record of terminally-ill cancer patients referred to palliative care at the cancer center in Isfahan, Iran. Potential drug–drug interactions (DDIs) were assessed by Lexi-Interact ver.1.1 online software.

Results

During the study period, 133 terminally-ill cancer patients were recruited. We detected 1678 DDIs with moderate or major severity levels. Among them, 330, 219, 32, 1075, and 51 interactions were categorized in B, C, D, and X drug interactions categories, respectively. One hundred and twenty-two patients (91.73%) encountered at least one potential drug-drug interaction during the end of life care. Mechanistically, most drug-drug interactions (64.5%) were pharmacodynamics. The most frequent pharmacological class of drugs responsible for DDIs were quetiapine (91 cases), oxycodone (87 cases), and sertraline (55 cases). Interaction between oxycodone and sertraline was found to be in the top 10 detected DDIs (13.7%).

Conclusion

ur results showed that potentially moderate or major drug–drug interactions often occur among terminally-ill cancer patients and the clinical significance of DDIs should be considered meticulously in the palliative care cancer setting.

Article Number: 19

The Effect of Omeprazole on Urinary Magnesium Excretion in Children with Peptic Diseases

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Introduction

This study investigates the impact of Omeprazole on urinary Magnesium (Mg) excretion in children undergoing treatment for peptic disease. Specifically, it examines how Omeprazole influences the fractional excretion of Mg.

Materials & Methods

This single-arm clinical trial was conducted from 2020 to 2021. With 44 children diagnosed with acid peptic disease who received Omeprazole (1-2 mg/kg/day) for 3 months at the Gastroenterology Clinic of Imam Hossein Hospital, Isfahan, Iran. Serum and urine levels of Mg and creatinine were measured before and after the intervention using the Pars Azmoon Kit, following the kits guidelines. The fractional excretion of Mg was then calculated using standard formulas.

Results

The mean urinary Mg levels decreased significantly from 4.96 ± 2.48 mg/dL before treatment to 1.46 ± 0.63 mg/dL after treatment ($P < 0.001$). Serum Mg levels also significantly declined from 1.90 ± 0.20 mg/dL before treatment to 1.37 ± 0.03 mg/dL after treatment ($P < 0.01$). The mean fractional excretion of Mg decreased from 5.2% ± 1.2% before therapy to 1.7% ± 0.63% after treatment ($P < 0.01$). Serum creatinine levels showed a slight increase from 0.62 ± 0.19 mg/dL to 0.67 ± 0.13 mg/dL ($P = 0.053$), whereas urinary creatinine levels increased by 20.80 ± 18.77 mg/dL ($P < 0.001$).

Conclusion

Observed hypomagnesemia is not attributable to increased urinary Mg loss. Instead, the kidneys appear to compensate for the reduced serum Mg levels by decreasing urinary Mg excretion, thereby conserving Mg in the body following Omeprazole treatment.

Article Number: 18

Evaluation of the Prevalence of Long QT Syndrome and the Related Risk Factors in Patients Admitted to a Referral Heart Hospital

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Introduction

LQTS (Long QT Syndrome) is a ventricular repolarization disorder characterized by prolongation of the QT segment in the electrocardiogram, which can lead to ventricular arrhythmia and sudden cardiac death. The cause of LQTS can be acquired (drugs, underlying diseases and metabolic disorders) or genetic, although in many cases there is an overlap between these two causes. The exact prevalence of LQTS is not well known because many of these people are asymptomatic and in some cases, sudden cardiac death can be the first symptom. Due to the importance of measuring QT segment length and its relationship with fatal ventricular arrhythmias, it is recommended to determine the prevalence of long QT in different communities.

Materials & Methods

This study is a retrospective cross-sectional study of an analytical-observational type and with a fundamental-applied approach in which by recording the information of patients in special forms and measuring the QT interval from their ECG (Electrocardiogram), the frequency of LQTS and the risk factors associated with it in patients, as well as the relationship between LQTS and the use of drugs, age, gender, structural heart disorders and others Risk factors have been evaluated.

Results

A total of 371 patients were included in the study, of which 244 were men and 127 were women. According to the definition of Guideline 2009 (Guideline AHA/ACCF/HRS 2009), 64 (17/25%) patients were identified as LQTS. There was a significant association between medications, structural heart disease and ischemic heart disease with the LQTS (P value less than 0.05 is considered statistically significant).

Conclusion

The results of this study showed that the frequency of long QT syndrome in the population of heart patients referred to the emergency department of Chamran hospital in Isfahan is about 36% and its risk factors include heart failure, metabolic disorders such as hypokalemia and hypomagnesemia, and the use of drugs that prolong the QT interval.

Article Number: 17

Rosuvastatin-Induced Rhabdomyolysis as a Result of Drug Interaction with Sitagliptin: A Case Report

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Introduction

Rhabdomyolysis was not reported in clinical trials with Sitagliptin alone. However, several reports in the literature on rhabdomyolysis resulted from the interaction between statins and Sitagliptin. In patients with type 2 diabetes and hyperlipidemia, it is expected to co-prescribe statins and Sitagliptin. Herein, we report the case of a 64-year-old woman with rhabdomyolysis should be caused by a drug-drug interaction between Rosuvastatin and Sitagliptin. The patient denied any history of weakness or myalgia during past medical assessments.

Case Presentation

A 64-year-old woman (height: 156 cm, weight: 65 kg) arrived at the emergency department complaining of muscle weakness and vomiting. On arrival, she stated that she had been experiencing nausea and vomiting for the past 10 days, with her muscle weakness and fatigue worsening over the past 3 days. Additionally, she expressed feeling lethargic and having reduced frequency and volume of urine in the past 3 days. Before admission, she had 3 instances of watery diarrhea daily. Her past medical history indicated diabetes and hypertension, dating back 30 years, as well as ischemic heart disease, which was diagnosed 3 years ago. Her medications included Zipmet® twice a day, Rosuvastatin 40 mg daily. The patient was diagnosed with acute kidney injury (AKI) in the setting of severe rhabdomyolysis accompanied with characteristic biochemical abnormalities of hyperkalemia, hyperphosphatemia, hyperuricemia, and elevated creatine phosphokinase levels. For therapeutic interventions, Rosuvastatin 40 and Citalopram were discontinued. Water intake was limited to manage the patient's hyponatremia. The patient received IV sodium bicarbonate, and insulin therapy was initiated. Oral hypoglycemic agents were stopped, and supportive care was provided. The effectiveness of therapeutic interventions was assessed daily to determine the need for emergency dialysis. After 3 successive days of reduced creatinine levels and clinical improvement, the patient was discharged on the 12th day of hospitalization after receiving dialysis. Creatine phosphokinase (CPK) value decreased and was recorded at 1220 U/L on discharge time. After 3 successive days of reduced creatinine levels and clinical improvement, the patient was discharged on the 12th day of hospitalization after receiving dialysis. Creatine phosphokinase (CPK) value decreased and was recorded at 1220 U/L on discharge time.

Conclusion

If Sitagliptin and Statins are prescribed together, it is crucial to be cautious of potential drug-drug interactions and elevated risks, especially in high doses, to elderly patients and individuals with underlying renal insufficiency.

Article Number: 16

Evaluation of Inhaled Colistin/Fosfomycin as an adjunctive Treatment for Ventilator-Associated Pneumonia: a Randomized Clinical Trial

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Introduction

Ventilator-associated pneumonia (VAP) caused by Gram-negative bacteria is associated with significant complications, mortality, and resource utilization. Over the past decade, there has been growing interest in using Fosfomycin to treat multidrug-resistant Gram-negative infections, particularly when limited viable options remain.

Materials & Methods

In a controlled clinical trial, participants with VAP caused by extensively drug-resistant (XDR) Acinetobacter baumannii were randomly assigned to two groups. Both groups received Meropenem (2 g every 8 hours) and intravenous Colistin (9 million IU loading dose, followed by 4.5 million IU every 12 hours). The control group was treated with inhaled Colistin (1 million IU every 8 hours), while the experimental group received a combination of inhaled Colistin (1 million IU every 8 hours) and Fosfomycin (80 mg every 12 hours). Serum procalcitonin (PCT) concentrations and the clinical pulmonary infection score (CPIS) were measured at baseline and upon completion of the intervention. Acute kidney injury (AKI) rates during treatment, as well as clinical (complete response, partial response, or treatment failure) and microbiological outcomes, were compared between the two groups.

Results

While the differences were not statistically significant (P=0.19), the failure rate was lower in the Colistin/Fosfomycin group (n=3; 7.7%) compared to the Colistin group (n=7; 18.9%). The Colistin/Fosfomycin group exhibited a higher microbiological response rate (n=19; 48.7%) than the Colistin group (n=13; 35.1%), although the difference did not reach statistical significance (P=0.023). Both groups showed a significant reduction in CPIS; however, there was no statistically significant difference in PCT levels or CPIS changes between the groups. Treatment duration was significantly shorter in the Colistin/Fosfomycin group (8.97±2.12 days) compared to the Colistin group (14.06±3.32 days) (P<0.001). The incidence of AKI was similar between the groups, with 15 cases (38.5%) in the Colistin/Fosfomycin group and 13 cases (35.1%) in the Colistin group (P=0.76).

Conclusion

The study demonstrated that the addition of inhaled Colistin/Fosfomycin to the treatment regimen resulted in faster recovery and shorter treatment duration for patients with VAP caused by XDR Acinetobacter baumannii.

Article Number: 15

Evaluation of Clindamycin Rational Use in Hospitalized Patients: Compliance with Guidelines at Sayyad Shirazi Medical and Educational Center, Gorgan, 2022

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Introduction

Antibiotics are among the most commonly prescribed drugs for hospitalized patients, and their misuse can lead to adverse effects and antimicrobial resistance. Clindamycin, effective against anaerobic bacteria, is often misused, potentially causing complications such as Clostridium difficile infections. This study aimed to evaluate the rational use of Clindamycin in hospitalized patients based on established guidelines.

Materials & Methods

This cross-sectional, descriptive, and retrospective study analyzed the medical records of 208 patients over 18 years old admitted to Sayyad Shirazi Hospital in 2022 who received intravenous Clindamycin. Data on demographics, Clindamycin dosage, duration, indications, and infection types were collected. Compliance with guidelines was assessed using the UptoDate database, and data were analyzed using SPSS software.

Results

Of the 208 patients, 56% were female. The most common diagnosis was sepsis (33%). Over half of the prescriptions were written by internists. Only 55% of Clindamycin indications, 54% of treatment durations, and 33% of overall prescriptions aligned with guidelines. Approximately 70% of irrational Clindamycin use was due to concurrent administration with broad-spectrum antibiotics like Meropenem (40%). Adverse effects were reported in only four patients.

Conclusion

The study found that only one-third of Clindamycin prescriptions adhered to guidelines. The results underscore the importance of considering patient clinical status, concomitant medications, and adherence to guidelines to ensure rational antibiotic use and reduce resistance and adverse effects.

Article Number: 3

Evaluation of Pharmacotherapy Interventions to Reduce Drug-Related Problems in Post-HSCT Outpatients: a Prospective Study

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Introduction

Patients undergoing hematopoietic stem cell transplantation (HSCT) are at increased risk of drug-related problems (DRPs) due to complex medication regimens and immunosuppression. Such problems commonly include adverse drug reactions (ADRs), dosage errors, potential drug interactions, and non-adherence. Timely identification and management of DRPs are essential to minimize complications and optimize therapeutic outcomes. Clinical pharmacists can play a key role in this process through active monitoring and interventions. However, limited data are available on their impact in post-transplant outpatient care. This study aimed to identify, classify, and assess DRPs in post-HSCT patients, and to evaluate the impact of clinical pharmacist interventions on patient safety and pharmacotherapy optimization.

Materials & Methods

This prospective study was conducted over a one-year period at the HSCT outpatient pharmacotherapy clinic of Shariati Hospital. A total of 100 patients were reviewed by a clinical pharmacist. DRPs were identified via clinical assessments, medication reconciliation, patient interviews, and medical record reviews and were classified according to the DOCUMENT classification criteria. For each DRP identified, the clinical pharmacist proposed appropriate recommendations including dose adjustments, therapeutic alternatives, and patient education, all coordinated with the transplant care team. Data were recorded in structured forms and analyzed descriptively.

Results

Among 100 patients, 537 DRPs were identified (mean: 5.4 per patient); 95% of patients experienced at least one DRP. The most common DRPs involved education or information (36%), while the least frequent were toxicity or ADRs, non-compliance and monitoring related issues (1.5%). Most pharmacist recommendations were related to patient education (62%), whereas the fewest addressed monitoring and dose selection/adjustment (<1%). There was no statistically significant difference in DRP incidence between autologous and allogeneic HSCT recipients.

Conclusion

This study underscores the high prevalence of DRPs among post-HSCT patients and emphasizes the crucial role of clinical pharmacists in their early detection and resolution. Targeted pharmacotherapy interventions, particularly patient education, structured follow-up, and interdisciplinary collaboration, significantly enhance pharmacotherapy safety and effectiveness, and improve clinical outcomes in the post-transplant setting. These findings support the integration clinical pharmacy services as an indispensable element of comprehensive post-HSCT care.

Article Number: 232

Effect of Eicosapentaenoic¬Acid Ethyl Ester on mRS and Inflammatory Biomarkers in Acute Ischemic Stroke: the Protocol for a Triple-Blind, Randomized, Placebo-Controlled Clinical Trial

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Introduction
Cerebrovascular accident (CVA) is the second leading cause of mortality worldwide and the most common cause of long-term disability in adults. EPA possess neuroprotective properties in patients with cerebrovascular accident (CVA), particularly in cases involving central inflammation and reduce the risk of stroke and is a candidate to decrease ischemic burden. The aim of this study is to evaluate the effectiveness of Eicosapentaenoic Acid on Modified Rankin Scale and inflammatory biomarkers in patients with acute ischemic stroke.
Materials & Methods
A triple-blind, randomized, placebo-controlled, two arm, parallel-group, clinical trial that will be conducted on hospitalized CVA patients, at neurology department of Imam Hossein Hospital. The patients in this study will be randomly divided into two groups: the intervention group, which will receive 2 grams of Eicosapentaenoic Acid daily, and the control group, which will receive a placebo (Corn oil). The Primary Outcome include mRS score while the other outcomes are NIHSS score and inflammatory biomarkers.
Results
The effects of Eicosapentaenoic Acid in reducing the severity of stroke and lowering inflammatory biomarkers in patients will be measured using validated patient assessment scales.
Conclusion
If the drug proves effective in these patients, it could be added to the list of medications used for ischemic stroke patients, leading to improvements or accelerated recovery in these individuals.
Article Number: 170

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Preparation and Evaluation of Polylactic Acid/ Chitosan Nano Fibers Containing Dexpanthenol on Diabetic Wound Healing in Rat

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Introduction

One of the most important complications of diabetes is diabetic foot ulcer, which has a 15% risk during the life years of diabetic patients.Nanofibers have been widely used in wound healing due to their excellent porosity, high moisture absorption, antibacterial properties, and good oxygen exchange rate that can release the drug in a controlled manner over a longer period. In this study, Polylactic Acid and Chitosan nanofibers were used due to its biodegradability and biocompatibility properties, non-toxicity wound healing properties, and anti-tumor properties. Dexpanthenol is an analog of vitamin B5 that stimulate epithelialization and granulation.The aim of this study was to deliver Dexpanthenol with the help of tissue engineering and nanotechnology and to evaluate the effect of this product in healing diabetic wounds in a diabetic rat model.

Materials & Methods

The ethical approval code of this research is (IR.KMU.AEC.1398.1123) on 2020. 30 adult male rats with an average weight of 200 mg were used that were divided into 5 groups: Treatment with Polylactic Acid and Chitosan nanofibers/Treatment with Dexpanthenol drug/Treatment with Polylactic Acid/Chitosan nanofibers containing 5% Dexpanthenol/Treatment with Polylactic Acid/Chitosan nanofiber containing Dexpanthenol 2.5%/Negative control that did not receive any treatment. Diabetes was induced by Streptozocin (STZ) (60 mg/kg) intraperitoneally. After that, animals were given sugar water for 72 hours. After 72 hours blood glucose was measured by glucometer: Rats with blood sugar above 200 mg/dl were considered diabetic. In order to create wounds, rats were first anesthetized using a mixture of Ketamine/Xylazine with a dose of Ketamine 80 mg/kg and Xylazine 10 mg/kg. Then, using a punch, a wound with an area of 1.5 square centimeters was created in the area between the two shoulders. Chitosan/Polylactic Acid polymer nanofiber containing Dexpanthenol was formed by electrospinning machine. The morphology of the synthesized nanostructures was checked by SEM (scanning electron microscope). XRD (X-ray Diffraction) was used for checking the relationship between crystalline phases and the size of nanomaterials. Checking the particle size was done using the Cordouan device. FT-IR (infrared Fourier transform spectroscopy) determine the structure and size. UV method was also used to check the amount of absorption of the formulation. The first group treated with nanofibers alone, the second group with Dexpanthenol solution, in the third and fourth groups, using nanofibers containing Dexpanthenol (2.5 and 5%) on days 0, 3, 7 and 14. In the control group, there was no therapeutic intervention. ImageJ software was used to measure the area of the wound.

Results

The SEM microscope image is shown. UV spectroscopy of nanoparticles containing Dexpanthenol in concentrations of 1.25, 2.5 and 5% are presented, the maximum absorption was at 240 nm. Normal distribution of particle size was 612.84 nm. XRD analyzed the size of the nanomaterials. The results of UV spectroscopy are presented, the maximum absorption was at 240 nm. The results of particle size distribution were presented, which shows the normal distribution of the particle size is 612.84 nm. The results of wound area were presented. The wound healing process was measured by Eq1 and was shown. A statistical analysis test compare significant differences. One way analysis didn't show any statistically significant difference between Dexpanthenol and nanofiber groups (P=0.98). All intervention groups were significantly different from control group. There were significant difference between Dexpanthenol 5% and other groups and it performs better than all groups

Conclusion

Polylactic Acid-Chitosan nanofiber containing Dexpanthenol is a novel drug delivery system according to the characteristics like excellent porosity, high moisture absorption, antibacterial properties and proper oxygen exchange and also nanofibers increase the effect of Dexpanthenol. The use of nanofibers containing Dexpanthenol in Streptozotocin induced diabetic rats reduce the wound area compared to other groups at 14th day, which shows its positive effect in healing diabetic wounds in the animal model.

Article Number: 40

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5-Alpha Reductase Inhibitors on Hypersexuality During the Manic Phase of Bipolar and Psychotic Patients; New Insight to a Well-Known Medicines

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Introduction

Bipolar disorder (BD) is a complex mental health condition characterized by dramatic shifts in mood and energy that can be so pronounced they disrupt an individual's ability to manage daily tasks and make even routine activities feel overwhelming. One of the early symptoms of a manic episode of BD is hypersexuality. Individuals affected by this condition often experience a heightened sex drive that goes far beyond societal expectations, which can lead to impulsive or even risky sexual behavior. The exact cause of hypersexuality in BD is not fully understood, but it is likely related to changes in brain chemistry and the reward pathways activated during manic episodes. The surge of mood-enhancing neurotransmitters like dopamine, endorphins, and oxytocin creates a strong sense of pleasure, which may drive the patient to seek sexual arousal. Hypersexuality during the manic phase can result from hormone imbalance and the interaction between estrogen and testosterone.

Materials & Methods

We aim to hypothesize the potential role of 5AR inhibitors as a treatment option for hypersexuality during manic episodes in bipolar and schizo affective disorders. Currently, there are no published clinical trials investigating the effectiveness of Finasteride or Dutasteride in these cases. However, four published studies, including a case report, a case series involving 11 male patients, a case series involving 10 male patients, and an animal study, have provided some evidence of the beneficial effects of Finasteride in psychiatric disorders.

Results

There are no studies on the use of Dutasteride for the treatment of psychiatric disorders or hypersexuality. However, in a clinical trial involving 117 men with androgenic alopecia, the incidence of sexual adverse events was nearly twice as high in the group receiving Dutasteride at a dose of 0.5 mg over 24 weeks. This increase is attributed to the potent inhibition of DHT.

Conclusion

Due to multi-factorial mechanisms—both modulating neurotransmitters that affect neural excitability and decreasing levels of dopamine and DHT, initial findings are promising. However, controlled trials are required. Finasteride is a well-known medication with an acceptable adverse effect profile, making it a desirable option. Nevertheless, its long-term impact on neurotransmitter levels in patients with BD remains unknown, and factors such as baseline neurotransmitter levels and coexisting conditions need to be considered. Clinicians must carefully weigh the potential benefits against the risks, especially in women of childbearing age, due to associated safety concerns.

Article Number: 36

Evaluation of Medication Adherence and Quality of Life of Patients with Heart Failure: A Single-Center Cross-Sectional Study at a Referral Center in Iran

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Introduction
Adherence to guideline-directed medical therapy is crucial for optimal outcomes in patients with heart failure (HF)
.To evaluate the adherence of the patients with HF to the guideline-directed medication regimen and assess the quality of life (QoL) in patients with chronic HF
Materials & Methods
A cross-sectional study was conducted among adult outpatients diagnosed with chronic HF. Data were collected using demographic and clinical questionnaires, the Morisky Medication Adherence Scale-8 (MMAS-8), and the Minnesota Living with Heart Failure Questionnaire (MLHFQ). Statistical analyses included the Kolmogorov-Smirnov test, .chi-square test, Fisher's exact test, ANOVA, Kruskal-Wallis H-test, and logistic regression, with significance set at $p < 0.05$
Results
Out of the 300 patients diagnosed with HF (64.7% male, median age 63 years) 69% had HF with reduced ejection fraction (HFrEF) and 62.4% were classified as NYHA III/IV. Echocardiographic results revealed a median EF of 30%. Medication adherence was low in 25%, moderate in 44.6%, and high in 30.3% of patients. Higher adherence was associated with improved QoL. QoL significantly differed across NYHA classes ($p < 0.05$). Logistic regression revealed older age to be associated with a lower risk of low .(adherence ($p=0.037$) and intracardiac devices were associated with a higher risk of low adherence ($p=0.037$
Conclusion
Given the importance of guideline-directed medication therapy in patients with HF, we observed a high rate of low adherence in this population. Patients with intracardiac .devices may be at increased risk for low adherence. Interventions to improve adherence and subsequently QoL are warranted

Article Number: 5

A Comprehensive Investigation of the Transplant Care Index and Its Influencing Factors in Kidney Transplant Patients

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Introduction
Kidney transplantation is the best treatment option for patients with end-stage kidney disease, associated with improved quality of life and a survival benefit of 10 years over those who remain on dialysis. The body may reject the new kidney; effective post-transplant care helps detect complications early. It requires a nuanced understanding of immunosuppression protocols, monitoring for acute kidney injury, and managing comorbid conditions like hypertension, diabetes, and critical care components including infectious risks, vaccination, and cancer screening. The Transplant Care Index (TCI) was designed as a single composite measure to track issues related to caring for a transplant, including adherence to diet, exercise, and medication regimens. This research investigated the Transplant Care Index (TCI) in kidney transplant recipients, examining its association with sociodemographic factors, medical and medication history, and indicators of renal function.

Materials & Methods
This cross-sectional, descriptive-analytical study was conducted between May and September 2022 and included 201 kidney transplant recipients aged over 17 years who were at least one month post-transplantation and receiving immunosuppressive therapy. Data collection involved administering a four-part questionnaire to each kidney transplant patient. This instrument encompassed: (a) sociodemographic characteristics, (b) medical and medication history, (c) renal function indicators, and (d) a standardized Persian version of the Transplant Care Index (TCI) questionnaire, comprising six items assessing self-care behaviors. The collected data were then entered into Microsoft Excel and analyzed using appropriate statistical methods in SPSS software.

Results
Of the 201 participants, 92 (45.77%) were male, and the mean age of the cohort was 47.48 ± 14.07 years. The mean Transplant Care Index (TCI) score was 15.00 ± 3.68 (maximum possible score: 24). Preliminary analyses revealed significant associations between TCI and gender, occupational status, time since transplantation, history of adverse drug reactions (ADR), history of medication allergy, and patient awareness regarding transplant medication. Multivariate linear regression analysis identified three independent determinants of TCI: elapsed time since transplantation (inverse relationship), previous history of ADR (inverse relationship), and patient awareness of transplant medication (direct relationship) ($p < 0.0001$, $R2 = 0.2116$, $df = 7$, $F = 7.25$).

Conclusion
The transplant care behavior among kidney transplant patients in this study was found to be at a moderate level. Our findings underscore the critical need for continuous initiatives aimed at enhancing medication knowledge in this population, particularly for individuals with a history of adverse drug reactions. Leveraging the capabilities of healthcare providers in structured training programs is strongly recommended to improve patient engagement and adherence to post-transplant care

Article Number: 82

Exploring the Low Omega 3 Index as a Suspected Element in the Diagnosis and Management of Depressive Disorders; a Systematic Review

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Introduction
Depressive disorders are prevalent and complex mental health conditions with multifactorial etiologies. Emerging evidence suggests a potential link between Omega-3 fatty acids—particularly Eicosapentaenoic Acid (EPA) and Docosahexaenoic Acid (DHA)—and mood regulation. The Omega-3 index, a biomarker reflecting the proportion of EPA and DHA in red blood cell membranes, has gained attention as a possible diagnostic and therapeutic indicator in depression. Some evidence adds to the knowledge of the disease mechanisms, including inflammation and oxidative stress's roles in its pathophysiology. This systematic review aims to explore the association between the Omega-3 index (O3I) and depressive symptoms, assess its utility in diagnosis and management, and identify gaps for future research.

Materials & Methods
Considering the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), the original peer-reviewed articles published without any time restriction were included in qualitative synthesis. PubMed, Scopus, Web of Science, and Google Scholar were searched on 5th April 2025. Precise but comprehensive syntaxes were designed to find all relevant records in scientific databases, and wildcard and Medical Subject Headings (MESH) databases were used to find all keywords related to patients' medical preferences. Search terms included “depress*," “Omega-3 Index," “mood disorder" and "omega-3 level". Inclusion criteria were studies with established patients with depressive disorders. Depressive symptoms were characterized with baseline examinations included depression ratings by the Diagnostic and Statistical Manual of Mental Disorders (DSM), Hamilton Depression Rating Scale (HDRS), Geriatric Depression Scale (GDS), Center for Epidemiological Studies-Depression Scale (CES-D), Beck Depression Inventory (BDI-II), Edinburgh Postnatal Depression Scale (EPDS), Patient Health Questionnaire-8 (PHQ-8), Center for Epidemiological Studies-Depression Scale (CES-D), Children's Depression Rating Scale-Revised (CDRS-R), Rosenberg Self-Esteem scale (RSE). The exclusion criteria were reviews, letters, posters, case reports, and case series. Two authors independently read titles, abstracts, and full text to identify eligible studies. Any conflicts were adjudicated through discussion. According to the characteristics of the eligible articles, a data extraction form containing the following modalities was utilized to categorize all relevant information: the first author, year of publication, date of study conduction, country, type of study, number of patients, and their demographics, observation, and treatment protocol, and depression assessment questionnaires. The primary outcome was the association between O3I and depression severity.

Results
Overall, 24 studies were included in the systematic review, and their data were assessed. The published evidence is compelling enough to suggest O3I as a risk factor for some psychiatric diseases, specifically major depression and postpartum depression. In occidental populations, we propose a risk threshold of 4–5% in major depression and 5% in postpartum depression. In postpartum depression, both Markhus et al. and Hoge et al. findings aid the concept of an O3I in mental health with a well-supported cut-off of 5% for low vs. high risk. However, Parker et al., to anticipate an increased risk of depression after delivery, an O3I < 5% in blood collected up to the 28th week of gestation should be considered a risk factor. Cai et al. admit an O3I influence on depression below a threshold of 4–5%. Their findings were not replicated by Pottala et al. and Cussotto et al. realized that O3I significantly predicted response to antidepressants.

Conclusion
Major depression disorder (MDD) is the psychiatric disease with the largest body of evidence involving inverse relationships with O3I analyzed both as a continuous and as a discrete variable. In occidental populations, we propose a risk threshold of (a) 4–5% in major depression and dementia and (b) 5% in postpartum depression. Although the diversity of methods, designs, sample sizes, O3I cut-offs, and O3I target values proposed entangles the construction of an O3I as a risk marker in depressive disorders, relevant conclusions and suggestions for future research can be drawn.

Article Number: 21

Evaluation of Pharmacy-Based Minor Ailments Management Across Tehran Pharmacies

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Introduction

Minor ailments are common, self-limiting conditions that lack complex clinical features and can be managed with limited specialized knowledge. Examples include cough, constipation, and eye redness. These conditions are often addressed through simple consultations and over-the-counter (OTC) medications, without requiring visits to specialized healthcare centers. Pharmacies, as accessible components of the healthcare system, play a vital role in providing consultation services and managing these conditions. Given the increasing burden on healthcare facilities and the need to optimize healthcare costs, utilizing pharmacies to manage minor ailments is of growing importance. This study aims to analyze patterns of pharmacy visits, key factors influencing outcomes, and the effectiveness of pharmacists' services in managing minor ailments in Tehran.

Materials & Methods

This study included all individuals with minor ailments who visited pharmacies in Tehran. Data collection was performed using a validated questionnaire reviewed by experts. Random sampling was conducted across pharmacies in five regions of Tehran: south, north, west, east, and central. Patients completed the initial paper-based questionnaire during their visits, and a follow-up questionnaire was completed electronically at least seven days later. Descriptive data were analyzed using measures such as mean, mode, and range, while inferential data were analyzed using SPSS software with statistical tests such as chi-square and ANOVA.

Results

A total of 391 individuals completed the initial paper-based questionnaire across 36 pharmacies, and 138 of these individuals completed the follow-up questionnaire. The most frequent reasons for visiting pharmacies were dermatological symptoms (25.8%), gastrointestinal issues (19.4%), dermatological complaints (17.9%), and pain (13%). Among the participants, 50% (69 individuals) reported complete recovery, 23.9% (33 individuals) reported partial recovery, and only 5% (7 individuals) reported worsening symptoms. Furthermore, 70.3% (97 individuals) indicated that they followed the pharmacist's recommendations and used medications properly. Analytical results revealed a significant relationship between the time pharmacists spent consulting patients and improved recovery rates and adherence to treatment. Conversely, no significant relationships were observed between treatment outcomes and factors such as income, health literacy, or education level.

Conclusion

The findings highlight the critical role of pharmacies in managing minor ailments and the importance of developing policies to enhance pharmacists' consultation skills. Strengthening legal and institutional support for pharmacies can improve access to healthcare, reduce treatment costs, and alleviate the workload on specialized healthcare facilities. This study demonstrates that pharmacist-provided services lead to high recovery rates and good adherence to treatment, underscoring the role of pharmacies as accessible and effective centers for managing minor ailments. With better training for pharmacists and policies to encourage consultation-focused care, pharmacies can further optimize their impact on public health.

Article Number: 140

Agreement of Hypomagnesemia Diagnosis in Three Perimeter of Serum, Urine, and Red Blood Cell in Intensive Care Unit:Pilot Study

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Introduction

Magnesium is a vital element in the body involved in biochemical and physiological processes. Magnesium deficiency can lead to serious consequences including cardiac, neurological, muscular disorders, and other clinical manifestations. In our country, commonly, Magnesium measurement is done by measuring serum Magnesium levels. This paper discusses the prevalence and consequences of Magnesium deficiency in patients hospitalized in the ICU and emphasizes the importance of diagnosis and treating hypomagnesemia.

Materials & Methods

Diagnosis of hypomagnesemia is done by measuring serum Magnesium, urine Magnesium, and Magnesium in RBCs. We conducted a prospective study on 30 critically ill patients (14 male, and 16 female) who were admitted to the ICU to examine the prevalence of Magnesium deficiency. In eligible patients, after measuring serum and RBC Magnesium levels, 7.5 grams of Magnesium Sulfate in 1000 ml isotonic saline was infused over 8 hours at a rate of 125 ml/hour and urine was collected for 24 hours from the start of the infusion.

Results

The mean age was 71. There was a significant difference between the levels of serum Mg and RBC Mg (U statistic = 266 and $P<0.05$). The results showed a significant difference between the levels of serum Mg and urinary Mg (U statistic was almost 0 and $P<0.05$). The results indicated a significant difference between the levels of urinary Mg and RBC Mg (U statistic was almost 0 and $P<0.05$).

Conclusion

There is no correlation between serum Magnesium and the body's Magnesium requirement in patients, and serum Magnesium does not reflect the actual status of patients in the ICU. Therefore, measuring the level of Magnesium in red blood cells is preferable to urinary Magnesium and serum Magnesium to investigate hypomagnesemia in the ICU. Additionally, there is no correlation between age, gender, APACHE II score, and the percentage of infused magnesium absorption in patients.

Article Number: 7

Investigating the Effects of Crocin Supplementation on Atherogenic Indicators, Inflammatory Biomarkers, and Endothelial Factors in Type 2 Diabetic Patients Under Metformin Treatment

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Introduction
Type 2 diabetes mellitus (T_2DM) is a chronic metabolic disorder associated with an increased risk of cardiovascular disease. Given the well-established role of oxidative stress in the pathogenesis and complications of T_2DM, antioxidant therapy has emerged as a potential strategy for managing disease progression. This study aimed to evaluate the effects of crocin supplementation on atherogenic indices, inflammatory biomarkers, and endothelial function in patients with T_2DM undergoing metformin therapy.

Materials & Methods
A randomized, double-blind, placebo-controlled clinical trial was conducted involving 60 patients diagnosed with T_2DM who were undergoing metformin therapy. The participants were randomly assigned to two groups (n = 30 per group): one group received a placebo twice a day, while the other received crocin supplementation at a dosage of 15 mg twice a day, over 12 weeks. Fasting blood samples were collected at both the beginning and end of the intervention to assess lipid profiles, endothelial function, oxidized low-density lipoprotein (ox-LDL), and monocyte chemoattractant protein-1 (MCP-1) as an inflammatory marker. Additionally, real-time polymerase chain reaction (PCR) was employed to evaluate the expression of inflammation-related genes in the patients'peripheral blood mononuclear cells (PBMCs).

Results
Crocin supplementation resulted in a significant reduction in the Atherogenic Index of Plasma (P = 0.01), very low-density lipoprotein (VLDL) cholesterol, and triglyceride levels (P = 0.04) when compared to the placebo group. These improvements were also statistically significant compared to the baseline values within the crocin group, indicating a positive effect of crocin on lipid metabolism. Furthermore, crocin supplementation led to a notable decrease in the MCP-1 serum levels relative to the placebo group (P = 0.01), suggesting an anti-inflammatory effect. Although no significant changes were observed in other measured biochemical or endothelial function parameters between the two groups, molecular analyses revealed that crocin significantly downregulated the gene expression of key pro-inflammatory cytokines, including interleukin-6 (P = 0.04) and tumor necrosis factor-alpha (P = 0.02) in PBMCs.

Conclusion
Crocin, a natural antioxidant, has shown beneficial effects in this context. In the present study, crocin supplementation significantly improved lipid profiles, reduced the Atherogenic Index of Plasma (AIP), and lowered inflammatory markers in patients with T_2DM. These effects may be attributed to crocin's ability to inhibit pancreatic lipase, promoting fecal cholesterol excretion and fat mass reduction. Additionally, previous studies suggest that crocin enhances the expression of phosphatidylinositol 3-kinase (PI_3K) and phosphorylated AKT (p-AKT), components of the PI_3K/AKT pathway, which is involved in reducing oxidative stress and inflammation. Thus, crocin may exert its therapeutic effects through this pathway. Further clinical and mechanistic studies are necessary to fully elucidate the pathways through which crocin mediates its protective effects.

Article Number: 25

Assessment of the Efficacy and Safety of Sublingual Melatonin on Symptom Severity, Quality of Life, and Sleep Disorders in Patients with Irritable Bowel Syndrome

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Introduction

Previous studies have demonstrated the efficacy of melatonin in alleviating symptoms of irritable bowel syndrome (IBS) and improving quality of life (QoL). Due to its superior bioavailability, this trial was designed to compare the effects of sublingual melatonin (SL melatonin) with a placebo in alleviating IBS symptoms, enhancing QoL, and addressing sleep disorders.

Materials & Methods

The IBS patients were randomly assigned to receive either 3 mg of SL melatonin or a matching placebo for eight weeks. Participants completed the IBS symptom severity score (IBS-SSS), IBS-quality of life 34 items (IBS-QoL 34), and Pittsburgh Sleep Quality Index (PSQI) questionnaires immediately before and after the study period.

Results

A total of 76 patients completed the trial over six months. The results indicated that the severity of IBS symptoms and QoL scores were significantly better in the SL melatonin group compared to the placebo group ($P = 0.032$ and $P = 0.045$, respectively). No participants withdrew from the trial due to serious side effects in either the SL melatonin or placebo groups.

Conclusion

Sublingual melatonin may be administered to IBS patients as a complementary treatment to alleviate symptoms and improve QoL.

Article Number: 22

Salvia Mirzayanii Rech. F. & Esfand as Adjunctive Therapy for *Helicobacter Pylori* Eradication: A Randomized Controlled Trial

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Introduction

Helicobacter pylori (*H. pylori*) infection is one of the most common bacterial infections in the world. It is associated with several complications such as peptic ulceration and gastric carcinoma. There are different treatment regimens for the eradication of H.pylori infection. Clarithromycin-based triple therapy containing a proton pump inhibitor (PPI), clarithromycin, and amoxicillin for 14 days is a typical first line treatment regimen in Iran to eradicate H. pylori. The most crucial issue in treating H. pylori infection is antibiotic resistance, which has increased in different parts of Iran over the last 20 years. So, it seems necessary to explore alternative agents to manage H. pylori infection. Some plants can be a good adjuvant treatment option due to their antimicrobial properties. *Salvia mirzayanii Rech. f. & Esfand* is a member of the Lamiaceae family. Some pharmacologic studies have reported antioxidant, anti-inflammatory and potent anti-H. pylori effect properties.

Materials & Methods

The leaves of *S. mirzayanii* were gathered from Kerman province and authenticated by Pharmacognosy Department of Faculty of Pharmacy. After cleaning the leaves, they were dried at room temperature. The dried leaves were ground and the resulting powder was used for capsule formulation. For standardization, the extraction of the plant leaves was performed using warm maceration method with 80% ethanol. The extraction yield was 15.7 (w/w %). *S. mirzayanii* oral granules were prepared by mixing 350 mg of the powdered plant per capsule with lactose monohydrate and starch powder. The final capsule weight was 650 mg. This randomized double-blind, placebo-controlled clinical trial was conducted in Besat Clinic affiliated to Kerman University of Medical Sciences, Kerman, Iran, from October 2019 to July 2020. This study (98000128) was approved by the ethics committee of Kerman University of Medical Sciences (IR.KMU.REC.1398. 251) and registered in Iranian Registry of Clinical Trials (IRCT20110310006026N9). All the participants read and signed a written consent form before initiating the study. The participating patients received one *S. mirzayanii* or placebo capsule twice a day for two weeks. Also, all the patients in both groups received clarithromycin-based triple therapy (*H. pylori* eradication therapy) including omeprazole (20 mg twice per day) or pantoprazole (40 mg twice per day), amoxicillin (1 g twice per day), and clarithromycin (500 mg per day) for two weeks, simultaneously. The placebo (containing starch) and *S. mirzayanii* capsules were identical in shape, color and outer packaging. In addition, *S. mirzayanii* or the placebo capsules were packaged and labeled as A or B by an independent person. To evaluate the eradication rate, post-treatment *H. pylori* status was determined by fecal antigen test at least four weeks after the completion of the treatment regimen. All the randomized patients were followed up until the end of the study.

Results

The mean age of the 99 participants was (35 ± 10) years of whom 59 (59.60%) and 40 (40.40%) ones were women and men, respectively. There were no significant differences between the two groups concerning the frequencies of the side effects of the medications. The percentage of the medications intake was not significantly different (P value = 0.387) between *S. mirzayanii* (92 ± 15) and the placebo groups (89 ± 17). *H. pylori* eradication rate of all the randomized participants was 59.59% (59 per 99 patients). The eradication rate was statistically significantly higher in *S. mirzayanii* group [84.62% (33 per 39 patients)] compared with that in the placebo group [62.50% (25 per 40 patients)] using PP analysis (P value = 0.026). The eradication rate was also higher in *S. mirzayanii group* [65.31% (32 per 49 patients)] compared with that in the placebo group [54.00% (27 per 50 patients)] for intention-to-treat (ITT) analysis, but it did not reached statistical significance (P value = 0.252).

Conclusion

The results showed that the use of *S. mirzayanii* as adjunctive therapy could improve H. pylori eradication rate. This finding may be related to its antibacterial, anti-inflammatory, immunomodulatory, antioxidant, and free radical scavenging effects. In the current study, more than 86% of the randomized patients had good compliance. The compliance to the treatment regimen was somewhat lower than the other studies. The profile of the adverse effects due to the eradication therapy in the present study is similar to that of other studies evaluating clarithromycin-based triple therapy in Iran. However, the frequency of these adverse effects in this study was lower than that of the previously reported ones. In conclusion, the use of *S. mirzayanii* as adjunctive therapy to 14-d clarithromycin-based triple therapy might improve *H. pylori* eradication rate.

Article Number: 209

Melatonin Aids in Treating Mood and Sleep Problems Resulting from Hormonal Therapy in Breast Cancer Patients: A Randomized, Double-Blinded, Placebo-Controlled Trial

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Introduction

Cancer encompasses a diverse range of diseases, with more than 100 variations, characterized by uncontrolled cellular proliferation and the acquisition of metastatic properties. Among these, breast cancer is the most prevalent life-threatening cancer affecting women worldwide and ranks as the second leading cause of cancer-related mortality. Common treatment modalities for breast cancer include chemotherapy, surgery, radiotherapy, and hormone therapy. Hormone therapy commonly employs selective estrogen receptor modulators (SERMs), luteinizing hormone releasing hormone (LH-RH) agonists, and aromatase inhibitors (AIs). Nonetheless, these medications can elicit adverse effects, including mood disorders, flushing, and depression, due to hormonal fluctuations. Melatonin, a naturally occurring hormone produced by the pineal gland, plays a crucial role in regulating numerous physiological processes in the human body, including mood, sleep, sexual behavior, and circadian rhythm.

Materials & Methods

The study designed for this research involved a randomized, double-blinded, placebo-controlled clinical trial. Participants were recruited between July 2020 and March 2021 at the hematologyoncology clinic of Omid Hospital, located in Isfahan, Iran. The ethical considerations of the study protocol were approved by the Isfahan University of Medical Sciences ethics committee (ID number: IR.MUI.RESEARCH.REC.1398.724). Additionally, the trial was officially registered with the Iranian Clinical Trial Registry Center (IRCT20180722040556N3). Before participation, all individuals were provided with informed consent forms, which were reviewed and signed after any uncertainties were thoroughly clarified. Our research included adult females (over the age of 18) diagnosed with hormone receptor-positive breast cancer who expressed concerns regarding the psychological effects of hormone therapy, including changes in mood and sleep patterns. The participants selected for this study were undergoing anti-hormone therapy using SERMs or AIs. Prior to the recruitment process, all potential participants were screened using the Hospital Anxiety and Depression Scale (HADS), which had been appropriately translated and validated in Persian. The 3 mg melatonin tablets were purchased from Razak® Pharmaceutical Company in Tehran, Iran. The indistinguishable placebo tablets were formulated with identical ingredients and excipients except for the active melatonin ingredient. These were prepared by the Department of Pharmaceutical Sciences at Isfahan University of Medical Sciences, Isfahan, Iran. All participants were asked to complete the designated questionnaires at the beginning of the study and again at the completion of the 4-week follow-up period. The questionnaires included the Center for Epidemiological Studies-Depression Scale (CES-D), the profile of mood states (POMS), and the pittsburgh sleep quality index (PSQI). The obtained results were then compared to the baseline measurements.

Results

The paired t-test showed no significant changes in CES-D (P-value = 0.42) and POMS (P-value = 0.15) scores before and after the intervention in the intervention group, but sleep quality improved significantly (P-value = 0.003). In the placebo group, CES-D (P-value = 0.26), POMS (P-value = 0.94), and sleep quality (P-value = 0.10) scores remained unchanged. Additionally, the intervention group showed significant improvements in subjective sleep quality and sleep latency (P-value < 0.05). Independent t-tests revealed no significant baseline differences between groups in CES-D, POMS, or sleep quality scores. After the intervention, there were still no significant differences between groups in CES-D (P-value = 0.97) and POMS (P-value = 0.70) scores.

Conclusion

The findings of the study indicated that the administration of melatonin (6 mg daily for a duration of 4 weeks) can effectively alleviate sleep disturbances caused by hormonal therapy in breast cancer patients. Specifically, improvements were observed in sleep latency, disturbance, and quality, along with a reduction in the use of sleep-promoting medications. Therefore, melatonin can be considered a supplementary treatment option to enhance sleep quality in this patient population. However, it is important to note that melatonin did not yield significant improvements in mood disorders and depression in this particular study. To validate these findings and determine the optimal dosage and duration of melatonin supplementation, larger-scale studies are warranted.

Article Number: 203

Comparison of Different Periods of Urine Collection in The Diagnosis of Augmented Renal Clearance in Patients Admitted to The Intensive Care Unit of Sina Hospital, Tehran

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Introduction
Augmented renal clearance (ARC) is a pathophysiological phenomenon, that can lead to increased renal clearance in abnormal conditions and is defined as creatinine clearance (CrCl) more than 130 mL/min/1.73 m². Renal function in intensive care unit patients plays a key role in determining drug dosage. The time of urine sampling and the deterioration of the patients'conditions are effective in identifying ARC. On the other hand, ARC is a relatively new concept and its mechanism of occurrence is still unclear. ARC identification in patients and its impact on treatment regimens have not been fully investigated. The general, specific and practical objectives of this study include determining the optimal method for assessing ARC in the intensive care unit, comparing different time intervals for urine collection in less than 24 hours, finding the shortest time interval with appropriate ARC detection power, and finally identifying this phenomenon in time intervals of less than 24 hours.
Materials & Methods
In this cross-sectional study, adult patients (18 years and older) admitted to the intensive care unit who were hospitalized in the ICU for more than 24 hours and less than 7 days and had a urinary catheter were included. The GFR of the patients was calculated using the MDRD formula, Patients were enrolled in the study with a GFR greater than 90 mL/min. Urine was collected using Foley catheters in separate containers at intervals of 0 to 2, 2 to 4, and 4 to 6 hours, 6 to 8 hours, and then 8 to 24 hours. ARC patients were identified with creatinine clearance greater than 130 mL/min/1.73 m^2. The optimal time interval for diagnosing ARC was also determined.
Results
26 patients with a mean age of 33.42 ± 15.11 and a mean serum creatinine of 0.72 mg/dL with a standard deviation of 0.14 were studied. Of these patients, 76.9% were identified as ARC patients in the 8-hour urine collection interval, 73.1% in the 2-hour urine collection interval, 73.1% in the 4-hour urine collection interval, 80.8% in the 6-hour urine collection interval, 30.8% of patients with MDRD formula and 50% with the Cockcroft-Gault (CG) formula. Shorter intervals of 4 and 6 hours showed strong, statistically significant correlations with the 8-hour standard (r = 0.869 and 0.934, respectively). Interpretation of the area under the receiver operating characteristic (ROC) curve showed that the 4-hour interval had the highest diagnostic accuracy (AUC = 0.867), making it a reliable and faster alternative. In contrast, the MDRD and CG formulas had weak, non-significant correlations and were not effective for identifying ARC.
Conclusion
Approximately, 77% of the patients in this study developed ARC. In accordance with previous studies, we concluded that CG and MDRD formulas were not accurate enough to detect increased creatinine clearance in patients. Urine collection for 8 hours was a reliable method for detecting increased urinary creatinine clearance. In this study, creatinine clearance over an 8-hour period was compared with other time intervals of 2, 4, and 6 hours to find a shorter time interval for identifying patients. The 2-hour period was prone to error and was not a reliable method for identifying ARC patients. The results of urine creatinine clearance in the 4-hour and 6-hour time intervals were most similar to the 8-hour time interval, but the sensitivity and accuracy of the 4-hour time interval were higher, which we concluded that calculating 4-h CrCl has similar results to 8-h CrCl and can be used as an alternative and faster method to identify ARC patients.
Article Number: 136

Evaluation of Oral Nano-Silymarin Formulation Efficacy as an Adjuvant to XELOX or m-FOLFOX 6 Regimen in Treating Metastatic Colorectal Cancer: A Triple-Blinded, Randomized Clinical Trial

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Introduction

Given the limited success of FOLFOX and XELOX regimens and the associated complications, offering a supplementary treatment with minimal adverse effects could ameliorate metastatic colorectal cancer (mCRC) management. Silymarin is a compound acquired from the Silybum marianum, which demonstrates its anti-cancer properties by targeting oxidative stress, inflammation, and angiogenesis pathways, in addition to inhibiting growth, metastasis, and promoting apoptosis. The principal objective of this study was to analyze the impact of nano-silymarin oral formulations as a supplement to XELOX or m-FOLFOX6 regimen in treating mCRC patients.

Materials & Methods

This clinical trial was carried out on 60 patients using a randomized, triple-blinded, and placebo-controlled design. They were given 70 mg capsules with 15% nano micelles silymarin twice per day after meals for the duration of six courses of XELOX or m-FOLFOX6, starting from the first day of treatment. Carcinoembryonic antigen (CEA) was assessed at baseline, and again after three and six course of treatment. Furthermore, the assessment of metastasis extent was conducted using CT scans of the abdomen and pelvis, liver, and lung with Response Evaluation Criteria in Solid Tumors (RECIST) 1.1 criteria at the end of the study.

Results

In our study, despite a decline in CEA scores in both groups over time compared to the beginning of the study, there were no notable differences in CEA values between the two groups after three and six rounds of chemotherapy. However, the likelihood of disease progression reduced with nano-silymarin use based on radiological assessment.

Conclusion

Nano-silymarin may show protective effects against metastatic colorectal cancer (mCRC) patients. However, further researches are needed to support using this compound as an adjuvant medication to XELOX or m-FOLFOX6 regimen in the mCRC managing.

Article Number: 1

Repurposing non-antibiotic drugs to enhance antibiotic activity against gram-positive bacteria

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Introduction

The increasing prevalence of antimicrobial resistance among gram-positive pathogens, particularly *Staphylococcus aureus* and *Enterococcus spp.*, poses a significant clinical challenge. With the development of new antibiotics lagging behind the spread of resistant strains, there's growing interest in alternative ways to strengthen current treatment options. One strategy is to approach non-antibiotic drugs to enhance the efficacy of existing antimicrobials. Certain widely used medications, originally developed for cardiovascular, psychiatric or inflammatory conditions have demonstrated potential to modulate bacterial physiology/behavior or host responses in ways that could enhance antibiotic effectiveness. Exploring these synergistic interactions may offer a promising resolve to address drug resistance, reduce treatment failures, and improve patient outcomes without relying solely on the discovery of new antimicrobial agents.

Materials & Methods

A focused literature search was conducted using PubMed, Scopus, and Google Scholar, applying keywords such as "antibiotic potentiation", "non-antibiotic synergy", and "Gram-positive resistance". Original peer-reviewed invitro, in-vivo and clinical studies were selected based on their relevance to gram-positive bacterial pathogens, particularly those demonstrating synergistic effects with conventional antibiotics. Inclusion criteria required that studies (1) assessed the combinatory effects of non-antibiotic agents with antimicrobials, (2) provided mechanistic insights (such as alterations in membrane integrity, inhibition of bacterial efflux pumps, or biofilm suppression), and (3) reported measurable outcomes such as changes in minimum inhibitory concentrations (MICs), bactericidal curves, or clinical mortality data. Reviews, theoretical models without biological validation, and studies focused exclusively on gram-negative organisms were excluded. Findings were synthesized to identify translational potential in both experimental and clinical settings.

Results

This review covered 30 peer-reviewed studies (15 in vitro, 8 in vivo and 7 clinical/translational) on non-antibiotic agents enhancing antibiotic activity against gram-positive pathogens, especially *S. aureus* and methicillin-resistant *Staphylococcus aureus* (MRSA). Reported effects included reduced MICs, improved bactericidal effect, and biofilm inhibition. Mechanisms involved membrane disruption, virulence gene suppression, efflux pump inhibition, and immune modulation. Promising agents included antiplatelet drugs like Ticagrelor (most studied and effective), statins, non-steroidal anti-inflammatory drug (NSAIDs), and selective serotonin reuptake inhibitors (SSRIs). These showed synergistic effects with antibiotics across models and activity against methicillin- resistant and vancomycin-resistant strains, highlighting potential in treating multidrug-resistant infections. Clinical data suggest certain co-administered drugs may improve infection outcomes.

Conclusion

Non-antibiotic drugs with known safety profiles offer a promising aide to existing antibiotics, particularly against resistant gram-positive bacteria. Mechanistically, diverse agents such as Ticagrelor, statins, NSAIDs, and SSRIs enhance antibiotic efficacy via membrane targeting, immune modulation, and efflux pump inhibition. With further research and clinical trials, these combinations could become valuable additions to existing treatment protocols and help reduce the burden of multidrug-resistant infections.

Article Number: 134

Assessment of the appropriateness of drug prescriptions using the START/STOPP criteria in individuals over 65 years of age with CKD

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Introduction
People worldwide are living longer, presenting new clinical challenges. Age-related changes, such as decreased renal function and altered drug distribution, make older adults more vulnerable to adverse drug reactions (ADRs). In particular, patients with chronic kidney disease (CKD) face compounded risks due to impaired drug clearance and the wrong use of Potentially Inappropriate Medications (PIMs). The STOPP/START criteria have emerged as a screening tool to detect potentially harmful prescriptions and clinically indicated omissions in geriatric populations. Given the projected surge in our country's elderly demographic and the scant data on PIM-related hospitalizations among CKD patients over 65, it is vital to explore the prevalence of multi-drug prescribing errors in this group. This study aimed to assess the accuracy of medication prescribing using the START/STOPP criteria in CKD patients over 65 years to improve medication safety and reduce the risks stemming from polypharmacy.

Materials & Methods
This study was designed as a descriptive cross-sectional investigation. After obtaining the code of ethics and approval from the competent authorities, the evaluation of Potentially Inappropriate Medications (PIM), Potential Prescribing Omissions (PPO), and Potentially Inappropriate Prescribing (PIP) was conducted based on STOPP/START criteria, version 2 (2015). Then, a questionnaire was designed to collect patient information. Data were collected from elderly patients (aged ≥ 65 years) with chronic kidney disease (CKD) stage 3 or higher. The source of data collection for CKD patients was attendance at the kidney clinic in Labbafinezhad Hospital between 2022 and 2023. Patients undergoing dialysis or those with incomplete clinical or laboratory records were excluded from the study. Medication information was extracted from medical records and patient interviews and assessed against STOPP/START criteria to identify instances of PIM, PPO, and PIP. The population of this study was considered 385 patients. Data were entered into statistical software for analysis. Descriptive statistics (mean, standard deviation, and frequencies) were used to characterize the study population. The frequency of PIMs, PPOs, and PIPs was calculated; Furthermore, the associations with CKD stage, number of medications, and other clinical variables were analyzed.

Results
Out of 385 patients, including 262 males (68.1%) and 123 females (31.9%), the mean (Standard Deviation or SD) age was 73.88 (6.66) years ranging from 65 to 88. According to the STOPP criteria, 147 patients (38.2%) were using at least one inappropriate prescribed medication, with a mean (SD) of 1.61 (0.82) inappropriate medications and the highest number of inappropriate medications was 4. Following the START criteria, at least one omitted medication was reported in 373 patients (96.9%) and the mean (SD) number of omitted medications was 2.52 (1.09). Moreover, the highest number of inappropriately prescribed medications was six and the majority of participants (50.39%) reported two omitted medications. Also, it was revealed that the most frequently omitted medications were the pneumococcal vaccine (92.2%) and the trivalent seasonal influenza vaccine (76.4%).

Conclusion
The STOPP/START criteria-based interference revealed that inappropriate medications were highly prevalent among elderly patients with advanced CKD. Due to the STOPP criteria, 38.2% of the participants were taking at least one inappropriately prescribed medicine. Moreover, the highest number of these medications was four. Based on the START criteria, 96.9% of participants reported at least one omitted medication. The majority of participants (50.39%) reported two omitted medications and the medicines most frequently omitted were the pneumococcal vaccine (92. 2%) and trivalent seasonal influenza vaccine (76.4%). The findings of this study highlight the exciting opportunities for medication review using up-to-date STOPP/START criteria. Additionally, the STOPP/START criteria can assist healthcare providers in optimizing the prescribing of medications for CKD patients to improve patient safety and patient outcomes while reducing the risk of adverse effects associated with polypharmacy.

Article Number: 229

Effects of Citalopram on Blood Pressure Control in Depressive Patients with Hypertension: A Randomized Clinical Trial

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Introduction

Since there is a bi-directional interaction between hypertension and depression, we aimed to evaluate the effects of citalopram administration in the management of hypertension.

Materials & Methods

A randomized clinical trial was conducted on 72 patients with concomitant depression and hypertension. The intervention group (n = 41) received citalopram 20 mg daily plus anti-hypertensive standard treatment, while the control group (n = 31) received only the standard treatment. The study's primary endpoint was in-office blood pressure (BP) measurement at baseline and home BP monitoring in the first and second months after entering the study.

Results

There were no significant differences in baseline systolic BP (163.3 ± 19.6 vs. 164.2 ± 20.3 mm Hg; P = 0.910) and diastolic BP (94.5 ± 13.8 vs. 88.2 ± 14.4; P = 0.071). After one month, diastolic BP (82.7 ± 11.7 vs. 77.09 ± 12.2; P = 0.023) was significantly higher in the control group compared to the intervention group. Two months after the intervention, systolic BP (133.8 ± 16.5 vs. 124.5 ± 12.4; P = 0.009) and diastolic BP (80.7 ± 10.3 vs. 73.7 ± 9.7; P = 0.002) were significantly decreased in the intervention group compared to the control group.

Conclusion

This study supported the beneficial effects of citalopram in lowering BP in patients with concomitant depression and hypertension.

Article Number: 157

Evaluating the Effects of Empagliflozin in Preventing Myocardial Injury in Patients Undergoing Percutaneous Coronary Intervention: A Double-Blind, Randomized Clinical Trial

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Introduction

Percutaneous Coronary Intervention (PCI) is a fundamental procedure for coronary artery disease management, yet the risk of adverse events such periprocedural myocardial injury (PMI) persists. This double-blind, randomized clinical trial aims to assess the efficacy of empagliflozin in preventing myocardial injury during PCI procedure.

Materials & Methods

A total of 90 patients were randomly assigned to two groups A and B; Group A as the intervention group received empagliflozin 25 mg 24 hours before and empagliflozin 10 mg 1-2 hours before coronary intervention and group Bas the control group received placebo at similar intervals. The primary outcome involved comparing baseline, 8-hour, and 24-hour Cardiac Troponin I (cTnI) and baseline and 24-hour high sensitive C-reactive protein (hs-CRP) levels after PCI in both groups to measure the incidence of PMI and anti-inflammatory effects of empagliflozin.

Results

Baseline cTnI levels with P = 0.955, 8 hours after PCI with P = 0.469, and 24 hours after the intervention with P = 0.980 were not statistically different in the two groups. Baseline levels of hs-CRP in both intervention and control groups were not significantly different (P=0.982). Also, there was no statistically significant difference in hs-CRP levels 24 hours after PCI in two groups (P = 0.198). Finally, the results showed that major adverse cardiac events (MACEs) did not occur in any of the groups.

Conclusion

The results of this trial could not express the advantages of acute pretreatment with empagliflozin in preventing PCI-related myocardial injury.

Article Number: 155

Promising Efficacy of Oral Nano-Silymarin Formulation on Prevention of Vancomycin Induced Nephrotoxicity: A Randomized, Triple-Blinded, Placebo-Controlled Clinical Trial

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Introduction

Vancomycin is widely used for methicillin-resistant *Staphylococcus aureus* (MRSA) infections. However, it is associated with nephrotoxicity, which is mostly induced by the creation of free radicals in the kidney. Several studies indicated the antioxidant effect of silymarin, particularly nano-formulations with high oral bioavailability. The aim of this study was to evaluate the potential preventive effects of silymarin against vancomycin-induced nephrotoxicity.

Materials & Methods

In this randomized, triple-blinded, placebo-controlled clinical trial, 60 patients who fulfilled the inclusion criteria were randomly assigned to placebo and nano-silymarin (Sinalive® 70 mg twice per day) groups in 1:1 ratio, and received them for a maximum of 14 days beside vancomycin. Patients' serum creatinine and urea and incidence of acute kidney injury (AKI) were assessed on days 3, 7, 10 & 14. The trough level of vancomycin was evaluated 30 minutes before the fourth dose of vancomycin.

Results

AKI incidence was signicantly lower in the nano-silymarin group ($P < 0.001$). The comparison of serum creatinine (Scr) between the placebo and treatment group showed no signicant difference on days 0, 3, and 7 but became signicant on days 10 & 14 ($P = 0.045$ & 0.048, respectively). The same finding was found about urea serum levels ($P = 0.005$ & 0.016, on days 10 & 14 respectively). Moreover, Scr and urea levels increased considerably in the placebo group during the study ($P < 0.001$) but not in the silymarin group.

Conclusion

It can be concluded that nano-silymarin is nephroprotective and has a preventive effect on the occurrence of AKI. However, further human studies are needed to prove these effects.

Article Number: 20

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چهاردهمین همایش داروسازی بالینی ایران

مقایسه دو روش مایع درمانی روتین و مایع درمانی هدفمند بر اساس شاخص پرفیوژن محیطی در بیماران مبتلا به سپسیس بستری در بخش مراقبت های ویژه بیمارستان الزهرا: کارازمایی بالینی تصادفی شده

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مقدمه

سپسیس به عنوان یک اختلال عملکرد ارگان تهدید کننده حیات تعریف می‌شود که ناشی از پاسخ نامناسب بیماری به عفونت است، اصلی‌ترین جزء درمان سپسیس، مایع درمانی می‌باشد. آنجایی تجویز بیش از حد مایعات عوارض جانبی مختلفی را برای بیماران ایجاد می‌کند. هدف از این مطالعه مقایسه دو روش مایع درمانی روتین و مایع درمانی هدفمند بر اساس شاخص پرفیوژن محیطی در بیماران مبتلا به سپسیس می‌باشد.

مواد و روش‌ها

در این مطالعه تصادفی کنترل شده، بیماران مبتلا به سپسیس بستری در بخش مراقبت‌های ویژه در ابتدا به دو گروه کنترل و مداخله تقسیم شدند. در گروه کنترل تجویز مایعات دریافتی به صورت ۳۰ میلی لیتر/کیلوگرم بود. در گروه مداخله تجویز مایعات به صورت حجم‌های بولوس ۲۵۰-۵۰۰ میلی لیتر و با پایش شاخص پرفیوژن محیطی (PI) انجام شد. جهت ارزیابی پاسخ و وضعیت همودینامیک بیماران، علاوه بر پارامترهای ماکروواسکولار (فشارخون، ضربان قلب و ...)، فاکتورهای میکروواسکولار ، مقادیر اندکس پرفیوژن، سطح لاکتات ، سیستاتین سی ، سطح کراتینین و تعادل مایعات در ابتدا و انتهای مطالعه در هر دو گروه اندازه گیری شد.

یافته‌ها

مایع درمانی هدفمند اثرات مثبتی بر روی شاخص‌های میکروواسکولار داشت و همچنین از نظر آماری بین دو گروه مداخله و کنترل تفاوت معناداری مشاهده شد. در حالی که از نظر تاثیر بر شاخص‌های ماکروواسکولار تاثیرات قابل توجهی دیده نشد. همچنین در گروه مداخله میزان مرگ و میر در مقایسه با گروه کنترل کمتر بود. در بررسی فاکتور اندکس پرفیوژن بافتی، بین دو گروه مورد مطالعه از نظر آماری تفاوت معناداری وجود داشت (P value= ۰.۰۰۱). در بررسی تعداد افراد مبتلا به نارسائی حاد کلیه براساس سیستاتین سی بین دو گروه مورد مطالعه در روز ۷ بعد از مداخله، تفاوت معناداری بین دو گروه دیده نشد (P value=۱).

نتیجه‌گیری

این مطالعه نشان داد که تجویز هدفمند مایعات با پایش شاخص پرفیوژن محیطی در کنار سایر شاخص‌های اندازه گیری میکروسرکولاسیون مثل زمان پرشدن مویرگی در کنار پایش شاخص های ماکروسرکولاسیون، علاوه بر بهبود پاسخ بیماران به درمان باعث کاهش عوارض جانبی ناشی از تجویز مایعات نیز می‌گردد. هرچند برای تعیین دقیق اثرات تجویز هدفمند مایعات در بیماران مبتلا به سپسیس، انجام مطالعات در مقیاس بزرگتر و با مدت زمان پایش طولانی تر توصیه می‌شود.

Article Number: 207

Evaluation of Appetite Changes and Potential Side Effects in Diabetic Patients Using Empagliflozin: A Cross-sectional Study

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Introduction

Empagliflozin, a Sodium-Glucose Cotransporter 2 Inhibitor, is widely prescribed for managing type 2 diabetes due to its benefits on weight loss, glycemic control and cardiovascular health. Although its side effects and appetite changes are uncertain.In this study we aimed to evaluate changes in appetite, weight, and potential side effects of empagliflozin in diabetic patients who received empagliflozin more than 1 month and compared the results on third and sixth month.

Materials & Methods

We conducted a cross-sectional study on 122 type 2 diabetic patients who had been on empagliflozin for at least 1 month and performed analysis using the Shapiro-Wilk test.

Results

After 6 months the results indicate a significant reduction in body weight and improved glycemic control. These findings suggest that empagliflozin is effective in weight loss for most patients. Appetite scores showed statistically significant changes in some patients, with a moderate correlation between weight loss and appetite changes and no adverse effect was reported.

Conclusion

These findings showed that empagliflozin is effective in weight loss while having variable effects on appetite. Although there was no significant difference between the beginning and the end of the study. This study shows that genetics, eating habits and lifestyle can change the outcome. These findings also highlight the importance of individualized patient monitoring, and further studies are required to elucidate the underlying mechanisms.

Article Number: 195

The Evaluation of Remdesivir Utilization Pattern and Its Correlation with Clinical Indicators in Hospitalized Patients During COVID

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Introduction
In 2019, COVID became the cause of a pandemic, with approximately 500,000 deaths in six months worldwide. Remdesivir, the first drug approved by the US Food and Drug Administration (FDA) for COVID-19 treatment, gained attention from numerous medical centers worldwide. The consecutive waves of COVID-19 peaks in Iran, coupled with the lack of widespread vaccination, and high consumption leading to a shortage of remdesivir in the country, prompted an investigation into the usage patterns of remdesivir and its correlation with clinical indicators in hospitalized patients.
Materials & Methods
A retrospective cross-sectional study was conducted using 390 patients' electronic records in seven different hospitals. Electronic records were reviewed and information was extracted under four categories: demographic data, lab test results at admission, medication information, and lab test results after completing treatment. Patients were classified into three time periods based on the date of their first Remdesivir injection. Outcomes were defined as final clinical status and length of stay in hospital.
Results
A total of 390 patients were enrolled, with 198 females and 192 males. The longest hospital stay was 88 days, with an average of 7.5 days. A total of 1,979 doses of Remdesivir were prescribed, with 224 doses being in accordance with the national protocol, 22 doses exceeding the protocol, and 144 doses below the protocol. The overall average dose consumption was 5.07 for each patient.
Conclusion
Overall pattern of Remdesivir utilization in the hospitals evaluated in this study (affiliated with Shahid Beheshti University of Medical Sciences) has been reasonable and in accordance with national protocols for COVID-19 infection.
Article Number: 65

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