EMERGING TRENDS OF NANOTECHNOLOGY AND NANOMEDICINE AND THEIR APPLICATIONS IN DIABETES MELLITUS

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Abstract: The field of engineering and science that focuses on the design, creation and use of systems and structures at nanoscale is known as Nanomedicine. Nanotechnology is a branch of science and engineering devoted to designing, producing and using structures, devices and systems by manipulating atom & molecules of nanoscale. It was first established in the year 1959. Over the past two decades, scientists have been working on developing Nanomedicines, which are small-molecule drugs that can be delivered to different parts of the body. One of the main advantage of this technology is their ability to deliver drugs to the right place at the right time. Other properties regarding drug bioavailability, solubility, stability etc. are enhanced. Individuals with Type-1 Diabetes cannot produce insulin due to an autoimmune attack on the beta cells in the pancreas. Those with Type-2 Diabetes develop insulin resistance or a deficiency in their ability to respond adequately to insulin in the bloodstream. The use of nanotechnology and nanomedicine in the treatment and detection of diabetes can help detecting of insulin & blood glucose level by using microphysiometer and implantable sensor are majorly used. The most important clinical application of nanotechnology will probably be in pharmaceutical development.

Keywords: Nanotechnology, Nanomedicine, Drug delivery systems, Diabetes

BEYOND CA-125: A LOOK AT CUTTING-EDGE BIOMARKERS FOR EARLY OVARIAN CANCER DETECTION

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Abstract: Ovarian cancer is one of the most common and fatal condition affecting 40% of the women. Early detection is key to a successful course of treatment and better results. Gene mutations, age, and family history are a few prominent risk factors. In contrast to several other types of cancer, ovarian cancer is renowned for its sneaky nature, frequently posing no symptoms during its initial stages. This covert progression often results in a late-stage diagnosis, meaning that the disease has already spread to other body areas and is difficult to treat successfully. Ovarian cancer is linked to a high death rate and is one of the main reasons why women die from cancer. This condition includes a variety of ovarian tumor forms, each with specific traits and therapeutic modalities. The biomarkers CA-125, HE4, Osteopontin, and genetic testing are emerging as tools for early identification of ovarian cancer. When ovarian cancer is suspected, doctors typically use a combination of imaging studies and biopsies to confirm the diagnosis. A mix of testing, risk assessment instruments, clinical examination, and imaging is needed for the early identification of ovarian cancer. Clinical trials can assist in developing customized treatment programs and testing cutting-edge remedies, drugs, and cures. Increasing public knowledge about clinical trials and early identification is essential to advancing innovation in the treatment of ovarian cancer. One way to make a difference is to advocate for better screening practices and support research. Depending on the cancer's stage and nature, treatments such as surgery, chemotherapy, and targeted therapy may be selected.

Keywords: Ovarian Cancer, Biomarkers, Genetic Testing, Tumors, Malignancy, Risk Assessment, Osteopontin

A CASE REPORT ON UNCOVERING THE LINK BETWEEN VITAM B12 DEFICIENCY AND INFANTILE TREMORS SYNDROME

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Abstract: The case of Infantile Tremor Syndrome (ITS), a condition characterized by Anemia, skin hyper-pigmentation, apathy, brown scanty hair, tremors, and developmental delay, is reported due to the lack of literature. It targets children aged approximately 6 months to 1 year who are from poor socio-economic backgrounds and are fed a milk-based diet. Cobalamin deficiency is prevalent in newborns exclusively breastfed by vegetarian mothers or those with pernicious Anemia due to active transport during pregnancy. This particular case is distinct since it took place in the little coastal town of Amalapuram, Andhra Pradesh, where vegetarianism is quite uncommon. A 9-month-old female was admitted to the hospital due to growth retardation, hyperpigmentation of the knuckles, pallor, and epileptic spasms in clusters in the head, and limbs. She slackened off for three months. She had been breastfed by the mother who was a pure vegetarian with low serum B12 levels of 9 ng/L. Upon admission, she seemed pallid and had brown scanty hair. A whole blood count of Platelets 87,000/mm3, WBC 2100 cells/mm3, and Hemoglobin 4.9 g/dL showed pancytopenia. Anisocytosis and macrocytosis were seen in the peripheral blood smear. To address the shaking and tremors, the infant was given intramuscular Cobalamin injections at a rate of 100 g per day. After symptoms improved, Lorazepam (0.1 mg/kg Slow IV) was withdrawn after 15 days. Early diagnosis of Cobalamin deficiency patients can prevent neurological damage, and a standard protocol should be followed to study multiple data points from disparate sources.

Keywords: Infantile Tremor Syndrome, Cobalamin Deficiency, Developmental Retardation, Epileptic Spasms, Vitamin B12 Supplementation, Hyperpigmentation

A RARE CASE OF LEIGH SYNDROME

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Abstract: Children with Leigh syndrome, a rare mitochondrial disease, experience developmental abnormalities as a result of deterioration of the Central Nervous System. Of neonates, at least 1 in 40,000 have Leigh syndrome. Pyruvate dehydrogenase deficiency or changes in mitochondrial DNA are the two possible causes of Leigh syndrome. In a region of the brain involved in motor movements, genetic abnormalities in mitochondrial DNA disrupt the energy sources that power cells. These genetic flaws cause the cells to continuously lack energy, which impacts the central nervous system and gradually deteriorates motor functions. This disease's clinical presentation varies greatly. Mostly identified with Neuro-imaging, notably with MRI Scans showing typical necrotic lesions that are symmetrical in the brain stem. In this instance, we describe a 9-month-old male infant who was a product of consanguineous marriage and was presented to the Emergency ward with Unconsciousness, Hypotonia associated with atonic seizures, and delayed psychomotor development. The child's MRI revealed that he had Hypodense Lesions in the Putamen which suggests Leigh syndrome, which is thought to be a neurodegenerative illness. There was evidence of elevated lactic acid levels. On admission, he became apnoeic and was ventilated immediately. ABG analysis indicated Metabolic Acidosis. IV Lorazepam, IV phenytoin, IV Mannitol, IV thiamine Infusion, Ubiquinone, and L-carnitine were given supportively. Although attempts to diagnose and prevent mitochondrial illness in utero are still in their infancy, symptomatic relief is achievable with appropriate research and supportive care. The purpose of this case report is to acquaint the healthcare professionals with the condition.

Keywords: Mitochondrial Cytopathy, Leigh Syndrome, Neurodegenerative Disorder, Developmental delay, Atonic Seizures, Symmetrical Lesions

A RARE CASE REPORT OF STREPTOCOCCAL PHARYNGITIS LEADING TO HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS

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Abstract: Hemophagocytic lymphohistiocytosis (HLH) is a hyper-inflammatory illness characterized by fever, hepatosplenomegaly, and skin, bone marrow, and central nervous system infiltration. Its pathophysiology involves an ineffective immune response, primarily facilitated by activated T cells and related macrophage activation, which intensifies into a potentially fatal cytokine storm. Globally, there is one case of HLH for every 50,000 live births. A severe infection, usually viral such as Epstein-Barr virus, virus-associated Hemophagocytic Syndrome, or cancer, can cause the immune system to overreact, leading to the acquired form of HLH. An instantaneous onset of throat soreness, a generalized erythematous rash, and intermittent fever were reported in a 21-year-old woman. The trunk, upper and lower limbs, and throat were all affected by the pain. The fever continued even after being treated with an Antipyretic. On Physical Examination, a slightly hyperemic Pharynx and swollen tonsils were observed along with mild hepatosplenomegaly. A complete blood count indicated Pancytopenia and a Chest X-ray revealed Cardiomegaly. Throat Swab cultures revealed Streptococcus. She was started with Meropenem 1g IV every 8 hours and Inj. Dexamethasone 6mg BD. Because the condition progresses quickly and there are no particular clinical settings for it, HLH remains difficult to diagnose and treat. The indications and symptoms of HLH should be made known to doctors, especially those employed in primary healthcare facilities so that they can begin early referrals to tertiary care facilities. Prompt and intensive treatment after diagnosis is essential for patient survival along with a positive outcome.

Keywords: Hemophagocytic Lymphohistiocytosis, Steroids, Streptococcus, Splenomegaly, Cardiomegaly, Multi-System Failure

A REVIEW ON MOYAMOYA DISEASE

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Abstract: The obstructed supraclinoid internal carotid arteries near the base of the brain in the basal ganglia region are the source of the uncommon and progressive cerebrovascular illness known as moyamoya disease. It is a gradual, long-term illness. The Japanese term "Moyamoya" means "hazy puff of smoke" or "cloud" because angiograms of patients with this illness often show blood vessels that resemble puffs of smoke. Although the precise cause of Moyamoya illness is still unknown, there appear to be hereditary and acquired types. Stroke or recurring Transient Ischemic Attacks (TIAs), commonly referred to as "mini-strokes," are typically the initial indication of Moyamoya illness. Additional symptoms could be a brain haemorrhage, migraines, seizures, aneurysm, developmental delays, involuntary movements, issues with cognitive function, issues with the senses, hemorrhagic stroke, ischemic stroke, or hemiparesis. Although the exact cause of Moyamoya disease is unknown, a number of factors, including Asian ancestry, a family history of the disease, coexisting medical illnesses, female gender, and early age, may raise an individual's risk of contracting the illness. Moyamoya disease's pathophysiology and aetiology are highly ambiguous. Tests such as Cerebral Arteriography, Magnetic Resonance Angiography (MRA), Magnetic Resonance Imaging (MRI), and others can be used to identify moyamoya disease. Moyamoya illness can be managed with medication and surgery, but there is no known cure. Therefore, in-depth research is required to precisely identify the disease's aetiology and to identify more potent therapy choices that will enhance the prognosis for Moyamoya Disease patients.

Keywords: Aneurysm, Angiograms, Hemiparesis, Moyamoya, Supraclinoid

DAPAGLIFLOZIN FOR HEART FAILURE AND KIDNEY PROTECTION: BALANCING BENEFITS AND RISKS

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Abstract: For the treatment of type 2 Diabetes Mellitus, Sodium-Glucose Co-Transporter 2 Inhibitors (SGLT2is) like Dapagliflozin and Canagliflozin represent a promising new treatment option. In addition to improving glycemic control by efficiently lowering Hyperglycaemia, SGLT2is also have some positive effects on the cardiovascular system that may help patients with heart failure as well as type 2 diabetes. Dapagliflozin improves glucose control without causing variance, according to clinical trials. The general population, including elderly individuals and those with high-risk cardiovascular disease or prior conditions, finds it safe and well-tolerated. An unidentified mechanism could play a protective role for the kidneys. Because Dapagliflozin causes natriuresis, it also reduces blood pressure. It lessens body weight and raises visceral fat levels, which helps to alleviate metabolic syndrome. Dapagliflozin exhibits the potential to delay the onset of atherosclerosis and reduce oxidative stress. Whether administered as monotherapy or in combination with other anti-hyperglycemic drugs, dapagliflozin consistently achieves favorable glycemic control, as well as reductions in body weight and blood pressure (BP), across a diverse patient population, as demonstrated in numerous well-designed clinical studies and their extensions. In individuals with established atherosclerotic cardiovascular disease (CVD) or multiple CVD risk factors, dapagliflozin not only reduces the incidence of cardiovascular (CV) death or hospitalization for heart failure (HHF) but also demonstrates a neutral effect on major adverse CV events (MACE) and potential slowing of renal disease progression compared to a placebo. However, further trials are necessary to validate these benefits and ascertain whether they represent class effects. Additional research is essential to formulate more efficacious anti-hyperglycemic regimens that provide clinical advantages beyond achieving effective glycemic control.

Keywords: SGLT2 Inhibitors, Weight loss, Cardiovascular Health, Metabolic Syndrome, Type 2 Diabetes Mellitus, Natriuresis

A CASE STUDY OF CYSTINURIA WITH COMPLEX DIAGNOSIS

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Abstract: Cystinuria is a genetic metabolic disorder characterized by elevated quantities of undissolved Cystine and three chemically related amino acids (lysine, ornithine, and arginine) in the urine. Excess Cystine in the urine can cause crystals and calculi to form in the kidney, bladder, and ureters. Recurrent Urolithiasis, a common symptom of Pediatric Urolithiasis that affects 5-7% of people aged 9-25, is primarily caused by Cystinuria. The first two decades of life are typically when symptoms appear, with flank discomfort and renal colic as the typical presentation. The overall, fluctuating prevalence is 1 in 7000 children. This case report discusses an 8-year-old boy who was initially diagnosed with Cystinuria type A and had recurrent kidney stones and Hematuria. Molecular analysis revealed a homozygous mutation of the SLC3A1 gene, and stone analysis revealed a Cystine stone. Urinary amino acid analysis revealed increased Cystine Excretion and the boy's parents were first-degree consanguineous. A positive Cyanide-Nitroprusside test result was found upon Urine Analysis. Renal calculi were detected by CT and ultrasonography scans. Potassium Citrate and Magnesium Citrate oral solution, a Urine Alkalizer, is used to treat the patient. He was told to follow up, and his problems had been resolved at that time. Inherited metabolic illnesses have seen a rise in the use of molecular diagnostic techniques; nonetheless, unidentified genetic alterations can lead to false-negative results. The effectiveness of preventive measures, patient compliance, and close monitoring are essential for the success of treatment. To increase compliance with medical therapy and follow-up, better approaches are required.

Keywords: Cystinuria, Cystine, Chronic Kidney Disease, Hematuria, Urine Alkalizer, Gene Mutations, Inherited Metabolic Disorder

ANTIBIOTIC RESISTANCE: A THREAT WE CAN'T IGNORE

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Abstract: One of the biggest issues facing global health today is antibiotic resistance. Antibiotic resistance is mostly caused by improper use of antibiotics in the medical field, including improper prescription of antibiotics and inadequate hygiene standards in hospitals. The rapid growth of resistant bacteria has made bacterial infections a hazard even decades after the first patients were treated with antibiotics. This issue is related to the misuse of medicines and the dearth of new treatment development. It is extremely difficult to research the use of antibiotics, the causes and progression of antibiotic resistance, regional variations, and treatments tailored to the specific healthcare environment of each nation. Nowadays, it is widely acknowledged that the issue affects not just people but also farms, long-term care facilities, animals related to humans, food, water, and natural ecosystems. Accordingly, the state of the entire interrelated local ecosystem should be influenced by the well-being of people, animals, and the local habitats contaminated with antibiotic resistance. Antibiotic Resistance is influenced by many factors, including incorrect treatment and excessive use of uncontrolled antibiotics. While they are still in the early phases, healthcare organizations have started to address AMR. Therefore, to preserve the sustainability of human progress and the corresponding interactions between humans and natural ecosystems, the issue of antibiotic resistance should be considered in the context of socioeconomic and ecological efforts. Antibiotic resistance can be minimized by the appropriate use of antibiotics, immunization, research, education, production of novel antibiotics, legislation, regulations, surveillance of antimicrobial resistance, and antibiotic use.

Keywords: Antimicrobials, Antibiotic Resistance, Irrational Prescription, Symptomatic Treatment, Culture-Sensitivity Tests, Empirical Dosing, Global Health Issue

BREATHING NEW LIFE INTO OLD DRUGS: A REVIEW OF THE FACILITATORS AND BARRIERS TO SUCCESSFUL DRUG REPURPOSING

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Abstract: Drug repurposing, also known as drug repositioning, is gaining popularity in drug discovery as it identifies fresh therapeutic applications for existing medications. Using the considerable information available on licensed medications provides a cost-effective and time-saving alternative to traditional drug development. Rising prices and longer timescales for breakthrough drug introduction highlight the importance of repurposing current pharmaceuticals to address unmet medical needs. The purpose of this study is to establish conclusive evidence for drug repurposing, as well as to elucidate its possible benefits and limitations. The opening emphasizes the pharmaceutical industry's issues and the necessity for new tactics. The research stage is established through a discussion of the justification for drug repurposing, such as the safety profiles of approved pharmaceuticals and expedited development processes. The discussion explores methodologies used in drug repurposing research, encompassing computational approaches, data mining of databases, and preclinical or clinical studies. Case studies demonstrating the promise of drug repurposing in various diseases provide concrete examples. Addressing challenges, such as off-target effects, dosage optimization, and regulatory considerations, contributes to a comprehensive discussion. The conclusion emphasizes drug repurposing as a realistic and efficient drug discovery strategy. Emphasizing successful instances and their impact on patient outcomes helps to underscore the strategy's relevance. Recognizing research limitations and suggesting opportunities for future research is critical. Finally, concluding remarks highlight the importance of drug repurposing in meeting pressing healthcare needs, calling for its inclusion in the larger drug development pipeline.

Keywords: Drug Repurposing, Drug Development, Insufficient Efficacy, Alternate Therapies, Drug Repositioning

BREAKING FREE FROM BLOOD PRESSURE BLUES: CAN TELEHEALTH BE THE CURE?

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Abstract: Regularly referred to as elevated blood pressure, hypertension is defined as a consistent elevation of the blood force exerted on artery walls. Managing hypertension involves making lifestyle adjustments and, if necessary, using medication. Telehealth plays a pivotal role in transforming the management of hypertension by leveraging innovation to enhance remote monitoring, establish connections with patients, and improve treatment results. In order to provide a comprehensive understanding of the present information scene, identify any gaps, and provide insight into recommendations for patient outcomes, this review attempts to compile previous literature and advancements in telehealth applications specifically designed for hypertension. Telehealth is a game-changer in the treatment of hypertension because of its cutting-edge techniques for encouraging medication adherence, monitoring patients remotely, and generally enhancing patient wellbeing. Nevertheless, there are issues that must be addressed, such as creative constraints, security worries, and change resistance. Attention also needs to be paid to compatibility difficulties, variances in accuracy, and limitations on the substitution of certain in-person tests. To overcome these challenges and fully comprehend telehealth's potential in treating hypertension in executives, a comprehensive approach that encompasses technology advancement, education, and strategy development is essential. This will improve patient outcomes and reduce the global burden of hypertension and chronic illnesses.

Keywords: Telehealth, Medication Adherence, Remote Monitoring, Hypertension, Comorbid Conditions, Patient Outcomes

ADDRESSING SUPERBUG THREATS WITH EFFECTIVE ANTIMICROBIAL STEWARDSHIP

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Abstract: The management of fungal infections in healthcare facilities is critical in light of the ongoing rise in drug resistance. Antibiotic use regulation programs are crucial because they can stop resistance from developing. Treatment regimens can be all the more really designated with the utilization of fast analytic innovations like polymerase chain response and cutting-edge sequencing. Severe contamination control systems can be executed to bring down the spread of diseases inside clinical establishments effectively. Experts cooperating to make customized treatment programs that consider opposition profiles. Blend treatment and immunotherapies are two techniques used to battle the spread of medication opposition. Showing patients and medical care experts contamination avoidance and control is critical. Following examples of obstruction illuminates' treatments, and observation and the study of disease transmission are significant devices in such manner. Global participation is fundamental due to how individuals travel. To get experiences into the viability of medicines and the reasons fundamental opposition, the board need a steady condition of exploration and development. The need for such methodology is featured by the clinical results of prescription obstruction, which incorporate expanding seriousness, treatment disappointments, and restricted other options. In conclusion, clinical management strategies are necessary to address the issues brought on by pathogens of new drugs while preserving patient outcomes and public health.

Keywords: Multi-Drug Resistance, Infection Control, Immunocompromised Patients, Susceptible Organisms, Prescribing Patterns, Anti-Microbial Agents

A CASE REPORT OF ARRHYTHMOGENIC RIGHT VENTRICULAR CARDIOMYOPATHY IN A 30-YEAR-OLD MALE

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Abstract: Arrhythmogenic right ventricular cardiomyopathy (ARVC), also recognized as arrhythmogenic right ventricular dysplasia (ARVD), represents a genetic anomaly affecting the myocardium. This disorder is distinguished by the substitution of myocardial tissue with fibrofatty deposits, predominantly impacting the right ventricle. The condition arises from genetic mutations and poses a risk of sudden death, particularly in young individuals and athletes. The estimated prevalence of ARVC in the general adult population ranges from 1 in 2000 to 1 in 5000. ARVC stands as a significant contributor to sudden cardiac death in young adults, contributing to approximately 11 percent of cases overall. This case report delves into the comprehensive assessment and management of a 30-year-old male, who sought medical attention for recurrent palpitations, particularly exacerbated during exercise. On examination he revealed a regular rhythm with occasional palpitations and no murmurs. Diagnostic tests, including ECG, echocardiogram, cardiac MRI, and genetic testing, unveiled sinus rhythm with frequent premature ventricular contractions, dilated right ventricle with impaired function, localized wall motion abnormalities, RV enlargement, fatty infiltration, and a pathogenic desmosomal gene mutation associated with ARVC. Despite an absence of significant past medical history and a family history of cardiovascular diseases, the patient was initiated on Metoprolol for symptom management and arrhythmia prevention. Lifestyle modifications, including exercise restriction and reduced caffeine intake, were implemented. Regular follow-up demonstrated a reduction in palpitations and stabilization of RV function and size on echocardiograms. This report not only contributes to the existing literature on ARVC but also serves as a valuable reference for healthcare professionals, shedding light on the challenges and managing this potentially life-threatening condition.

Keywords: Arrhythmogenic Right Ventricular Dysplasia, Fibrofatty deposits, Right ventricular involvement, Gene mutation, Palpitations, Exercise-induced symptoms

NANOPARTICLES IN DRUG DELIVERY

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Abstract: The introduction of nanoparticles in biomedical research has drawn out new possibilities in therapeutics, drug delivery and diagnostics. Their small size (in nanometres) and adaptable characteristics position nanoparticles as versatile tools. Smart nanoparticles for targeted drug delivery and controlled release show promise in optimising treatment outcomes. In drug delivery, nanoparticles enhance solubility, bioavailability, and stability assisting in early disease detection and improved monitoring in diagnostics and imaging. Biocompatibility studies and investigations into biodistribution and toxicity are crucial for safe clinical implementation. Methods like Chemical Precipitation, Green Synthesis, Gas-Condensation Method, Electrodeposition, Microemulsion etc. offer opportunities for customizing nanoparticle characteristics. For e.g., Liposome encapsulation, a Bottom-Up approach using Sol-Gel Synthesis, arranges lipids into vesicles encapsulating drugs like doxorubicin. This method enhances drug solubility, enables controlled release, and reduces side effects, particularly in cancer treatment. Despite enormous promise, challenges such as determining long-term effects and potential toxicity remain. Continued interdisciplinary research and collaboration are required to exploit the potential of nanoparticles in healthcare fully. The fusion of biological sciences with nanotechnology implies an unprecedented future in which nanoparticles generate innovative approaches. This facilitates more effective, targeted, and personalized approaches to patient care. Personalized medicine, tailoring treatments to individual characteristics, is facilitated by nanoparticles enabling targeted drug delivery, personalized diagnostics, and patient-specific therapies.

Keywords: Nanoparticles, Liposome encapsulation, Bottom-Up approach using Sol-Gel Synthesis, Targeted Drug Delivery, Doxorubicin, Cancer

ADVANCEMENT IN 3D PRINTING FOR PERSONALIZED MEDICINE

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Abstract: Three-dimensional (3D) printing is an additive manufacturing technique, which has emerged as a versatile method capable of producing a range of medical products, including 3D drug formulations, medical devices, and tissues/organs based on digital designs. The approval of Spritam, the first 3D-printed drug authorized by the FDA, has stimulated significant interest among researchers, spurring ongoing investigations into various customized dosage forms. The applications of 3D printing across various medical conditions, including cancer, diabetes, cardiovascular disorders, and neurodegenerative diseases, are discussed, emphasizing the utility of this technology in creating anatomical models, tissues, and organs, as well as the significance of individualized dosing. The importance of customized dosage forms is evaluating their potential impact on patient-specific treatment strategies. Ongoing research efforts are highlighted, focusing on the development of tailored medications to meet the unique needs of individual patients. Quality control, standardization, and regulatory approvals are critical aspects that require careful attention to ensure the safety and efficacy of 3D-printed medical products. The advancement of 3D printing technology illustrates its futuristic potential in therapeutic approaches. From personalized medicine to the fabrication of intricate anatomical models, tissues, and organs, 3D printing offers a broad spectrum of applications that could significantly benefit human health. While acknowledging challenges and regulatory considerations, the overall outlook suggests a promising future for 3D printing in shaping the landscape of healthcare and manufacturing.

Keywords: Three-dimensional printing, (3D) printing, Spritam, Customized dosage form, Cancer, Diabetes, Cardiovascular disorder, Neurodegenerative Disease

A CASE REPORT ON ERDHIEM CHESTER DISEASE

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Abstract: Erdheim-Chester Disease (ECD) is an uncommon non-Langerhans cell histiocytosis characterized by xanthogranulomatous infiltration of foamy histiocytes surrounded by fibrosis. ECD can either be asymptomatic or manifest as a multisystemic disease with potentially life-threatening implications, often affecting the skeletal system. We present a case report of a 45-year-old male who sought medical attention due to persistent bone pain and constitutional symptoms. Imaging studies revealed skeletal involvement, manifested by bilateral long-bone sclerosis, consistent with Erdheim-Chester disease (ECD). Histopathological analysis of a bone biopsy confirmed the diagnosis of ECD, showing CD68+ cells and no presence of Birbeck granules. Subsequent investigations ruled out systemic involvement, emphasizing an isolated skeletal manifestation of ECD. The patient was initiated on interferon-alpha therapy, resulting in symptomatic improvement and stability upon follow-up imaging. Our case underscores the necessity of considering ECD in patients with persistent bone pain and constitutional symptoms. Imaging and histopathological analysis played crucial roles in confirming the diagnosis, while further investigations were essential in defining the isolated skeletal nature of the manifestation. Erdheim-Chester Disease poses a diagnostic challenge due to its rarity and diverse clinical presentations. This case exemplifies the importance of a comprehensive diagnostic approach in patients with persistent bone pain and constitutional symptoms. The successful management of isolated skeletal ECD through interferon-alpha therapy underscores the significance of timely intervention. As our understanding of ECD advances, ongoing research, and interdisciplinary collaboration are crucial for refining diagnostic criteria and optimizing therapeutic strategies, ultimately enhancing outcomes for individuals facing this rare and complex disease.

Keywords: Erdheim-Chester Disease, Xanthogranulomatous Infiltration, Sclerosis, Birbeck Granules, Fibrosis, Skeletal System Disorders

A CASE REPORT ON MALLORY WEISS SYNDROME IN CHRONIC ALCOHOLISM

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Abstract: Mallory Weiss Syndrome is characterized by longitudinal mucosal lacerations gastroesophageal junction, caused by intense retching or vomiting. The lacerations often lead to bleeding from submucosal arterial plexus. Alcohol consumption over time, severe vomiting and coughing, and in certain cases, food poisoning are the main causes. The bleeding stops spontaneously in 90% of patients and they can be managed conservatively, endoscopy therapy is required if there is an active bleeding. A 43-year-old male patient presented to emergency department complaining of 10 episodes of hematemesis attacks since yesterday night. The most recent incident occurred around 6:30 am and was linked to a history of stomach pain, specifically in the right hypochondriasis. They brought him into the room for resuscitation. Due to active bleeding, the patient was admitted for an urgent endoscopy. The patient in this study had a history of prolonged alcoholism, hematemesis, and stomach pain consistent at right hypochondriasis. Antiemetic, antacids, cough suppressants, antibiotics, and multivitamins were administered to the patient as additional treatments. In addition to other supportive care, the patient received IV fluids, antibiotics, and antacids. Prior to discharge, the patient was stable. The patient's erosive gastro duodenitis led to the diagnosis of Mallory Weiss Tears. Alcohol abuse is a major contributing factor to the patient's Mallory Weiss syndrome, which causes hematemesis and oesophageal tears. Chronic drinkers frequently experience Mallory Weiss tears, which are invariably the result of persistent vomiting, particularly bloody vomiting.

Keywords: Hypochondriasis, Gastro duodentis, Mallory Weiss tears, oesophageal tears, Alcohol consumption

NOVEL DRUG DELIVERY SYSTEMS USED IN THE TREATMENT OF AUTOIMMUNE DISEASES

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Abstract: Modern scientific and technological advancements have revolutionized how we identify, treat, and prevent various diseases in every aspect of life for humans. Inflammatory bowel disease (IBD), Graves' disease, systemic lupus erythematosus (lupus), rheumatoid arthritis (RA), and Hashimoto's thyroiditis—a chronic, degenerative inflammatory illness—the body's immune system fights against foreign microbes. Blood arteries, connective tissues, joints, muscles, skin, red blood cells, and endocrine glands, such as the thyroid gland (in conditions like Graves' disease and Hashimoto's thyroiditis) and the pancreas (in type 1 diabetes), are frequently impacted by autoimmune illnesses. These illnesses can have a variety of outcomes, from localized harm to specific tissues to changes in organ development and function to more serious consequences when multiple organs are impacted throughout the body. Nonetheless, it's thought that a combination of environmental and biological factors contribute significantly to the development of autoimmune disorders. This analysis examines the pathophysiology, predictors, and factors that contribute to the pathogenesis of autoimmune diseases. We discuss emerging novel drug delivery systems (NDDS) such as nanoparticles, dendrimers, micelles, microspheres, liposomes, and so on, as well as conventional drug therapeutic agents since these tools have the potential to overcome the drawbacks of conventional drug delivery systems. While several NDDS have been used in a variety of fields, liposomes have received particular attention and are thought to have potential uses in the diagnosis and treatment of autoimmune diseases. The advantages and disadvantages of treating autoimmune diseases with these drug delivery methods have been discussed, along with potential future developments.

Keywords: NDDS, Autoimmune Diseases, Conventional Drugs, Hashimoto's Thyroiditis, Graves ' disease, Nanoparticles, Liposomes

POLYOXYETHYLATED SURFACTANTS USED IN OPTHALMIC PREPARATIONS

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Abstract: Surfactant are surface-active compounds i.e. they can adsorb to solids and fluid surfaces. Surfactants can reduce the tension between solids liquids and gases. It breaks the junctional complexes, increases drug solubility, enhancers permeability, prolongs pre-corneal retention. Surfactants work as mucous layer removers and enhance penetration. The characteristics of surfactants used in ocular Nano emulsion are: Interfacial tension: surfactants should pursue very low interfacial tension. Oil droplet coalescence: coalescence of oil droplets should be avoided by the surfactants. Solubility: in the continuous Phase as the Nano- emulsion the surfactant should dissolve. Ocular preparation uses polyoxyethylated non-ionic surfactants because of its bioavailability of poorly water-soluble drugs and its ability to increase the solubility, it has gained a lot of attention in the pharmaceutical industry. The overview tells about the role of these surfactants in dealing with the challenges related to ocular drug delivery such as less bioavailability, restricted corneal penetration, and pre-corneal loss. This review provides a comprehensive overview of the surfactant and thermodynamic properties, applications in ocular absorption and safety of polyoxyethylated nonionic surfactants in tropical ophthalmic drug delivery. Advantages of polyoxyethylated are compatibility, stability, less toxic, less hemolytic and less irritant. In this review discussion of the advantages of using polyoxyethylated nonionic surfactants as ocular formulation ingredients is done. Information is also provided on their safety to the eye tissues over chronic subjection. In conclusion, polyoxyethylated nonionic surfactants play a very important role in the success of tropical ophthalmic drug delivery systems, and they improve the efficiency and patient obedience of ophthalmic medications.

Keywords: Pre-corneal, corneal retention, non-ionic, thermodynamic properties, ophthalmic medications, hemolysis, bioavailability

ACCELERATING ANTIVIRAL DRUG DISCOVERY INSPIRED FROM COVID-19 PANDEMIC

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Abstract: Viral outbreaks are the gravest public health risks of our times exemplified by the ongoing corona virus disease 2019.before the covid-19 the focus of antiviral development was on human immunodeficiency virus (HIV)and hepatitis cvirus(HCV),accounting of more than 67%of approved antivirals. During the corona virus disease 2019 pandemic, a wave of rapid and collbrating drug discovery efforts took place in academia, industry, culminating in several therapeutics being discovered, approved and deployed in a 2 year time frame. This article summarizes the collective experience of several pharmaceutical companies and academic collaboration that were active in severe acute respiratory syndrome corona virus (SARS-CoV.2) antiviral discovery. Discovery of antiviral drug some key stages are there during process: target selection, medicinal chemistry, antiviral aa days, animal efficacy and attempts to pre-empt resistance. Considering the small size of viral proteome, comprehensively building an arsenal of probes for proteins in viruses of pandemic concern is a worth while and tractable challenge for the community. rapid identification of potential antiviral candidates for combating covid-19.Accelerating this process requires leveraging advanced technologies, fastering global partnerships and optimizing drug development pipe lines,the ongoing commitment to swift and efficient Discovery holds promise enhancing our ability to combat emerging Viral threats,ultimately safeguarding global health. The use of advanced technologies expedites identification of potential drug candidates, streamilining the screening process and offering hope for faster therapeutics . It highlights the significance of collaborative efforts within the scientific entities.

Keywords: Collaborative research, advanced technologies, global partnerships, drug development, emerging viral threats, global health.

A COMPREHENSIVE CASE REPORT ON GUILLAIN-BARRE SYNDROME

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Abstract: The degenerative neurological condition known as Guillain-Barre syndrome is marked by gradual tingling, weakness, loss of sensation, and muscular stretch reflexes. While the exact cause is unknown, spinal nerve root demyelination is thought to be the cause. The main symptom of Guillain-Barre syndrome is symmetrical muscular paralysis, a neurological condition. Patients may experience moderate or severe involvement, which in a very limited number of cases could result in mortality. It is believed that a prior infection most frequently a gastrointestinal or respiratory infection caused the Guillain-Barré syndrome (GBS). The majority of GBS cases typically occur several weeks before the onset of illnesses caused by bacteria such as Campylobacter jejuni, CMV, Mycoplasma pneumonia, Pseudomonas or influenza virus. Identification and prompt referral of potentially severe cases are crucial for initiating relevant investigations (e.g., spinal taps, electrodiagnostic testing) and providing appropriate therapy. Making a differential diagnosis is crucial. GBS can induce atypical clinical manifestations, contributing to potential confusion and diagnostic errors. In this report, we describe a case of Guillain-Barre syndrome in a 19-year-old male patient presented with sudden onset of dysphagia since one day, hoarseness of voice since one day and throat pain since one day. Symptoms of bilateral ascending muscle weakness of four limbs developed subsequently. A diagnosis of GBS was established on the basis of the neurological examination, imaging studies, culture and sensitivity tests, analysis of the cerebrospinal fluid (CSF), and nerve conduction investigations. The patient was hospitalized for 15 days. The Patient was treated conservatively with Antibiotics (IV), Anticoagulants (IV), PPI (IV), Immunoglobulin (IV) and other supportives. Physiotherapy was also initiated. GBS depends upon early diagnosis and care may be significant in the long-term prognosis.

Keywords: Guillain-Barre syndrome, neurological condition, bacteria, differential diagnosis, muscle weakness

MICROBIOME IN STOOL – EARLY DETECTION OF PANCREATIC CANCER

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Abstract: The most common cause of cancer-related mortality is pancreatic cancer. Failure to diagnose can be caused by a wide range of factors, including ambiguous symptoms, a lack of diagnostic markers, vigorous tumour biology, early metastasis, and treatment resistance. Innovative methods for pancreatic cancer early detection, prevention, and therapy require immediate attention. The human body's microbiota is crucial for sustaining homeostasis. An imbalance in the microbiota, or dysbiosis, can cause a range of ailments, including cancer, by altering the immune system, promoting inflammatory responses in tumours, and influencing the sensitivity that tumours respond to medications. It is simple to examine for changes in intestinal flora resulting from pancreatic tissue changes using faecal samples. This approach will be straightforward as screening faecal samples will be less invasive and simpler to perform than challenge biopsy. Studies on the faecal microbiota in pancreatic cancer have revealed a number of microorganisms linked to the disease, including fusobacterium, porphyromonus, and Bacteroides. Current findings providing justification for more research on using the microbiome to create novel diagnostic and therapeutic approaches for pancreatic patients. Even more enigmatically there is currently a growing focus in creating therapies that target microbiome regulation. Probiotics, dietary modifications, antibiotics, and faecal microbiota transplantation are a few alternatives that may help to increase the effectiveness of existing treatments and lessen undesirable side effects. Although there are still obstacles to be resolved, this is a fast-developing field with potential for application in clinical practice and an entirely novel approach for enhancing patient outcomes.

Keywords: Faecal microbiome, Microbiota, Pancreatic Cancer, Probiotics, Microbiome regulation

DRUG-INDUCED FARSIGHTEDNESS

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Abstract: Accommodative loss, a characteristic of presbyopia, has a detrimental impact on the quality of life connected to health and eyesight. It happens to those who, around the age of forty, gradually lose their capacity for adaptation. Contraction of the iris and ciliary muscle, as well as the shift and convergence of the lens, are necessary for accommodation. By activating the muscarinic receptors found in both tissues, the parasympathetic nervous system effectively controls the degree of contraction of the ciliary muscle and the iris required to change the shape and location of the lens. According to the theory put forth here, patients with emmetropic presbyopia may be able to rectify adaptation with medication, which consists of cholinergic and non-steroidal anti-inflammatory drug (NSAID) combinations. The goal of topical treatment is to alter one or more aspects of the accommodative process by medication combinations. These treatments can be applied either monocularly or binocularly. Extending the para-sympathomimetic action's duration and adjusting accommodation. The combination of drugs improves near eyesight but not far vision. It's crucial to remember that the medication form utilized has no adverse effects, including inflammation. Pharmacological management of presbyopia appears to be a viable and alluring option for presbyopia patients, despite the lack of a fully defined mechanism. Because the research included in this review are either single case series or contain a small number of patients, they should be regarded as pilot investigations.

Keywords: Drug-induced Disorders, Presbyopia, Accommodation, Vision, Farsightedness, Ciliary Muscles

A GUIDE TO ADVERSE DRUG REACTION CAUSALITY ASSESSMENT IN ADULTS

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Abstract: An essential component of the medical field is pharmacovigilance (PV), which is concerned with collecting evidence, detecting, assessing, comprehending, and preventing adverse effects or other problems related to drug use. Drug safety and pharmacovigilance are concepts that are drawing people's attention to the many impacts of drugs. Tools for measuring adverse drug reactions (ADRs) are crucial for identifying, evaluating, and determining the severity of ADRs. The most widely used causality assessment scales are highlighted in this overview, including the Naranjo Causality Assessment System, the WHO-Uppsala Monitoring Center algorithm for the Rousseau-Uclaf Causality Assessment Method (RUCAM), the Liverpool Causality Assessment Tool (LCAT), and the ADR assessment. The BARDI, or Bayesian Adverse Reactions Diagnostic Instrument. It comes with benefits and drawbacks. As of right now, no one causality evaluation scale has been accepted and widely used due to variance and irregularity in the validity and reliability. The PvPI recommends the WHO-UMC scale, although many primary care doctors opt for the simple Naranjo calculation. Poor repeatability and disparities in layout between different CATs have been noted in the analysis of ADRs. Since the assessment of causation is an essential part of the pharmacovigilance cycle, an objective scale that is widely accepted for this purpose needs to be developed. Similar scales can be used to survey interrater fluctuation in subsequent tests. It is expected that additional research will be conducted to establish the gold standard strategy for the assessment of ADR causation.

Keywords: Adverse Drug Reaction, Naranjo algorithm, Causality assessment tools, WHO-Uppsala Monitoring Centre causality assessment system

A REVIEW ON MANAGING STRATEGIES FOR NEURODEGENERATIVE DISORDERS: CHALLENGES IN DRUG DISCOVERY AND DEVELOPMENT

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Abstract: Neurodegenerative disorders are primarily characterized by the loss of nerve cells. The most common neurodegenerative disorders include Alzheimer's disease and Parkinson's disease. Although there are many medications currently approved for the management of neurodegenerative disorders, the vast majority of them only help treat the symptoms associated with them. This lack of therapies targeting the pathogenesis of the disease is primarily due to the restrictive effects of the blood-brain barrier (BBB), which keeps approximately 99% of all "foreign material" out of the brain. Since their discovery, nanoparticles have been successfully used for targeted delivery to many organs, including the brain. This review briefly describes the pathophysiology of Alzheimer's disease, Parkinson's disease, and amyotrophic lateral sclerosis, and their current treatment approaches. We then highlight the main challenges facing drug delivery to the brain, followed by the role of nanotherapeutics in the diagnosis and treatment of various neurological disorders.

Keywords: Amyotrophic Lateral Sclerosis, Blood Brain Barrier, Nanoparticle, Neurogenesis, Parkinson's Disease, Neurodegenerative Disorder, Alzheimer's Disease

MICROENCAPSULATION: ADVANCES IN FABRICATION METHODS, APPLICATIONS, AND ONGOING RESEARCH TRENDS

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Abstract: Microencapsulation is defined as the process by which small particles or droplets are coated to form microcapsules. Microencapsulation is done to protect the active substance or to improve the biopharmaceutical profile of the drug. With the advent of microencapsulation, the development of microcapsules is easy. In microcapsules, the outer wall is called the shell, covering, or membrane, and the substance inside the microcapsule is known as the core or internal phase. Basically, there are three types of microcapsules, i.e., matrix, polynuclear, and mononuclear. Microcapsules are fabricated by different methods, like physical methods (spray drying, spray chilling, fluid bed coating, multi-orifice centrifugal process) and chemical methods (coacervation phase separation, solvent evaporation, solvent extraction, and interfacial polymerization). Formulation of peptide microcapsules, chitosan-alginate microcapsules, and silica-based microcapsules is possible by such methods. The microencapsulation process has found wide applications in various fields, including food, pharmaceuticals, and cosmetics. For example, recent research has focused on the microencapsulation of essential oils, lipids, and bioflavonoids, showcasing the versatility of this technique. The ongoing research and development in this area continues to expand the possibilities for the efficient and effective encapsulation of diverse materials, paving the way for advancements in various industries. The merit of microcapsules is the avoidance of degradation of the active substance in gastric pH-sustained release and spatial targeting of the active ingredient. This review article gives insights into various methods for the fabrication and application of microcapsules in the pharmaceutical industry and recent research trends.

Keywords: Microcapsules, Methods of Microencapsulation, Chitosan-Alginate Microcapsules, Silica Based Microcapsules, Applications, Recent Research Trends

IMPACT OF ARTIFICIAL INTELLIGENCE (AI) ON DRUG DISCOVERY AND DEVELOPMENT

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Abstract: Techniques utilising artificial intelligence (AI) have the potential to transform personalised medicine by optimising therapy, reducing adverse effects, and revolutionising drug release modelling. Researchers can develop customised and successful medicines by optimising dosing regimens, including patient,specific characteristics, and predicting drug release profiles through the application of AI aalgorithms. ThisAI based strategy could lead to better treatment outcomes, higher patient satisfaction ratings, and advancements in the pharmaceutical sciences. Guidelines and best practices for data collecting and sharing are established through international collaborations and professional organisations. Algorithm validation can be made easier by open data initiatives, which also promote scientific advancement and transparency. The prevalence of human diseases is experiencing a substantial increase, while the available drugs for treatment or cure remain limited. However, the future landscape promises a change due to the integration of artificial intelligence and the pharmaceutical industry, leading to expedited drug discovery and enhanced clinical outcomes. The utilization of artificial intelligence has brought about a paradigm shift across various stages of drug discovery.

Keywords: Drug discovery research, Future of healthcare, Nano technology, Drug design, Artificial intelligence

HEALTH DYNAMICS OF EARLY AND PREMATURE MENOPAUSE: A DEEP DIVE INTO WOMEN'S WELL BEING

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Abstract: In India, the end of the reproductive stage, or early menopause, is a serious health risk. Smoking is a common cause of this stage, which mainly affects women between the ages of 50 and 52. The time after menopause, known as post-menopause, is frequently linked to conditions like osteoporosis, breast cancer, cardiovascular disease, kidney problems, and vaginal infections. Significant health issues that Indian women must deal with include PCOS, ovarian and breast cancer. Their well-being is also impacted by elements like prostitution, early marriages, inadequate childrearing gaps, bad diet, and poor sexual hygiene. With conditions like PCOS, ovarian cancer, and breast cancer, Indian women face the greatest obstacles. Women's health can be negatively impacted by a number of circumstances, including prostitution, early marriage, inadequate child-rearing intervals, bad diet, and poor sexual hygiene. Women go through a variety of symptoms during this time, including mood swings, vaginal dryness, irregular periods, and insomnia. Both early and premature menopause, whether they result from natural causes or external factors, are associated with long-term health risks such as osteoporosis, neurological disorders, and cardiovascular disease. Associations with untimely or premature menopause encompass a range of adverse health consequences, including cognitive impairment, dementia, parkinsonism, glaucoma, coronary heart disease (CHD), osteoporosis, mood disorders, sexual dysfunction, and heightened overall mortality. Treatment and management strategies for early menopausal symptoms include boosting calcium consumption, engaging in regular exercise, and using hormone replacement therapy.

Keywords: Menopause, prevention, risk factors, Women's health, management

ROLE OF HIGH THROUGHPUT IMAGING AND MOLECULAR MARKERS IN NEW DRUG DISCOVERY

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Abstract: According to the FDA, biomarkers are generally detectable aspects of the body. This characteristic allows for the objective comparison of a therapeutic intervention's effects on pathogenic processes, regular biological processes, or pharmacological reactions. Molecular, imaging, and psychometric are the three types of biomarkers. Biomarkers in clinical trials can be categorized according to their diagnostic, prognostic, or predictive roles. Furthermore, molecular markers allow for customized drug delivery strategies, however high throughput imaging is a modern technique that facilitates the visualization and quantification of cell phenotypic characters in a multitude of samples. Monitoring the molecular foundation of disease origin and progression is essential to enable targeted drug delivery, precision medicine, and successful outcomes in the therapy of complex chronic illnesses, such as metabolic sickness, autoimmune, inflammatory disorders, neurodegenerative disease, and cancer. In conjunction with bioinformatics and biostatistics, recent developments in multi-omics techniques (such as genomics, transcriptomics, proteomics, metabolomics, cytometry, and imaging) have made it feasible to accelerate the discovery and development of specific biomarkers for such diseases. Because cancer biomarker expression seems to be relatively low, the structure and optical features of zero-dimensional quantum dots offer a promising means of stable optical imaging both in vitro and in vivo. To conclude, Companies are seeing lower costs and higher success rates as a result of pharmacological initiatives that use biomarker and high throughput imaging techniques in drug discovery. This novel approach offers opportunities for future research to further enhance its capabilities in the prediction of drug-target interactions.

Keywords: Molecular markers, High throughput imaging, Multi-omics, drug discovery, Quantum dots, Optical imaging

HYDROGELS USED IN NOVEL DRUG DELIVERY SYSTEM

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Abstract: Hydrogels, three-dimensional networks of hydrophilic polymers with the ability to absorb and hold large amounts of water, have garnered significant attention due to their unique properties and diverse applications. These crosslinked polymer chains exhibit biodegradability, biocompatibility, and stimuli-responsiveness, making them suitable for a wide range of fields, including biomedicine, environmental engineering, soft robotics, and wastewater treatment. The synthesis of hydrogels involves natural or synthetic polymers, polymerizable synthetic monomers, or a combination of both, and can be achieved through physical, chemical, or biological methods. Their properties, such as mechanical strength, swelling behavior, and degradation rate, can be tailored by controlling the crosslinking density, polymer concentration, and reaction conditions. Hydrogels have found extensive use in biomedical applications, including drug delivery, tissue engineering, wound healing, and medical devices. Recent research has focused on developing hydrogels with unique mechanical properties, such as high strength, toughness, and self-healing ability, for advanced applications in flexible electronics and soft robotics. The underlying technological advancements in hydrogel development suggest potential for broader application across various fields. Despite the challenges associated with formulating hydrogels with controlled mechanical properties, their versatility and potential continue to drive research and innovation in this exciting area of materials science and engineering.

Keywords: Hydrogels, Three-dimensional networks, Biomedical applications, Stimuli-responsive, Crosslinked polymer chains

E-POSTERS

OBSESSIVE COMPULSIVE DISORDER (OCD)

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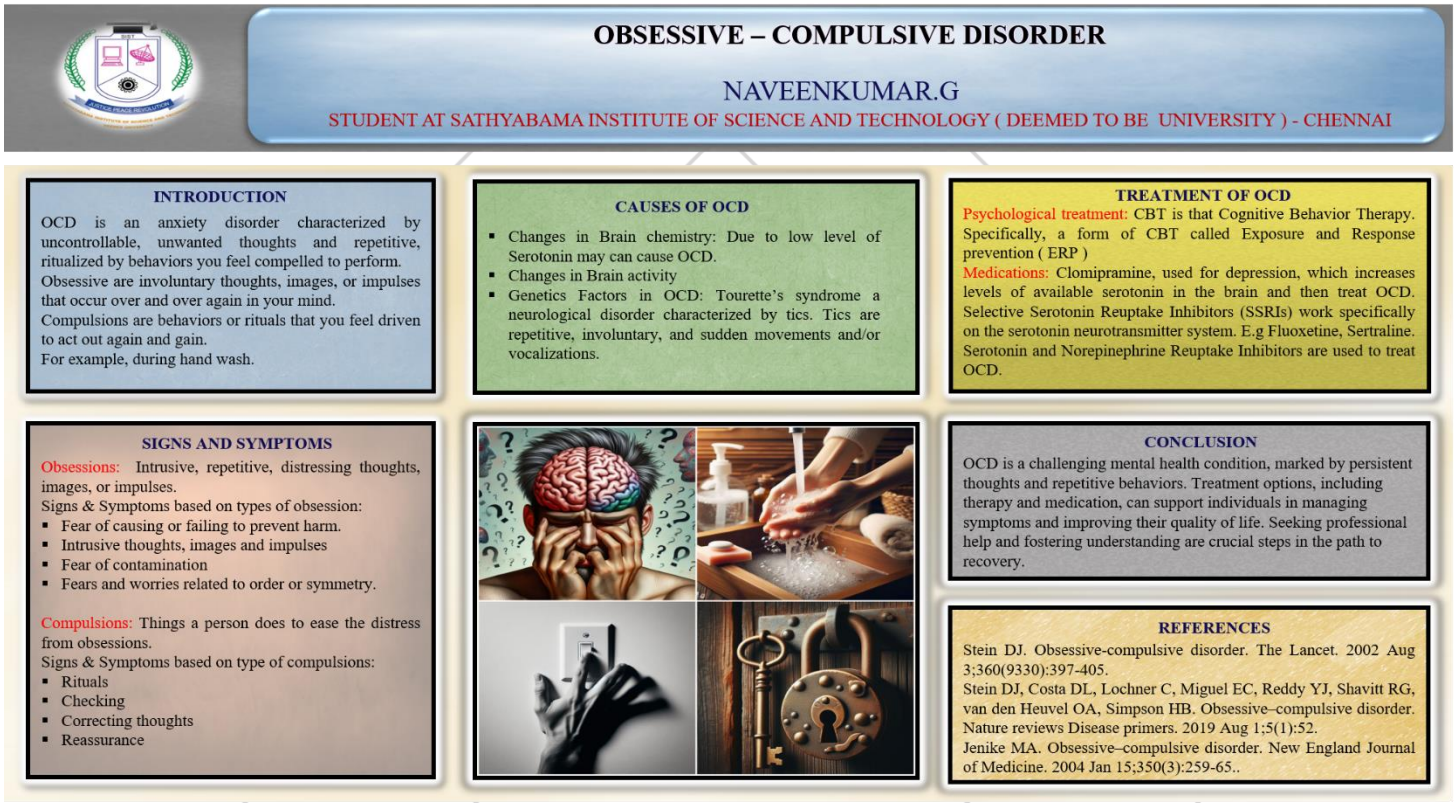

ROLE OF HIGH THROUGHPUT IMAGING AND MOLECULAR MARKERS IN NEW DRUG DISCOVERY

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ROLE OF HIGH THROUGHPUT IMAGING AND MOLECULAR MARKERS IN NEW DRUG DISCOVERY

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ABSTRACT

According to the FDA, biomarkers are generally detectable aspects of the body. This characteristic allows for the objective comparison of a therapeutic intervention's effects on life processes. Molecular, imaging, and psychometric are the three types of biomarkers. Biomarkers in clinical trials can be categorized according to their diagnostic, prognostic, or predictive roles. Furthermore, molecular markers allow for customized drug delivery strategies, however high throughput imaging is a modern technique that facilitates the visualization and quantification of cell phenotypic characters in a multitude of samples.

Monitoring the molecular foundation of disease origin and progression is essential to enable targeted drug delivery, precision medicine, and successful outcomes in the therapy of complex chronic illnesses, such as metabolic sickness, autoimmune, inflammatory disorders, neurodegenerative disease, and cancer. In conjunction with bioinformatics and biostatistics, recent developments in multi-omics techniques (such as genomics, transcriptomics, proteomics, metabolomics, cytometry, and imaging) have made it feasible to accelerate the discovery and development of specific biomarkers for such diseases. Because cancer biomarker expression seems to be relatively low, the structure and optical features of zero-dimensional quantum dots offer a promising means of stable optical imaging both in vitro and in vivo. To conclude, Companies are seeing lower costs and higher success rates as a result of pharmacological initiatives that use biomarker and high throughput imaging techniques in drug discovery. This novel approach offers opportunities for future research to further enhance its capabilities in the prediction of drug-target interactions.

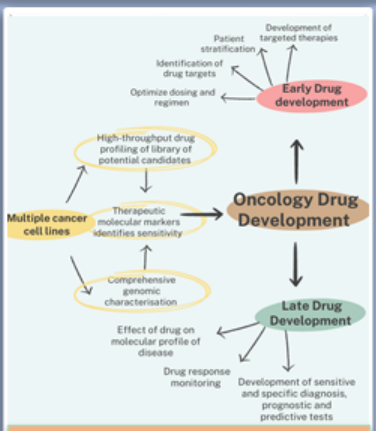

FIGURE:
Cancer Drug Development: Current Paradigms and Key Components

MOLECULAR MARKERS	USE IN CANCER DRUG DISCOVERY
Image-based markers	identify relevant genes via functional genomics and studying cell responses to growth factors
Circulating tumor DNA (ctDNA)	can be found in the blood and is derived from the tumor cells. It can be used to monitor the response to treatment and predict the likelihood of recurrence
Protein markers	identify specific proteins associated with a particular cancer type or stage. For example, estrogen receptor and progesterone receptor are used as biomarkers for breast cancer
Tumor tissue markers	found in the tumor tissue itself and can be used to predict the response to treatment and the likelihood of recurrence. Examples include RASSF1A, HOXA5, TWIST1, CCND2, p16, BRCA1, and others
Genomic markers	associated with tumor gene mutations, patterns of tumor gene expression, and nongenetic changes in tumor DNA.

Introduction

Cancer is a disease characterized by uncontrolled cell division, often linked to a series of changes in the activity of cells. It is thought to develop in a multi-step process. The integration of high throughput imaging and molecular markers has significantly enhanced the efficiency of cancer drug discovery and development. Molecular imaging, in particular, has become an essential tool for early cancer detection, staging, and the monitoring and prediction of response to targeted therapies. By combining the insights derived from high throughput imaging with the information obtained from molecular markers, researchers and pharmaceutical companies can make more informed decisions regarding the selection of drug candidates and the design of clinical trial.

Conclusion

In conclusion, the role of high throughput imaging and molecular markers in the new drug discovery of cancer drugs cannot be overstated. These technologies have not only accelerated the identification of novel therapeutic targets but have also revolutionized the assessment of treatment efficacy and the prediction of patient response. As the field continues to evolve, the integration of high throughput imaging and molecular markers will undoubtedly play a pivotal role in the development of next-generation cancer drugs, ultimately leading to improved patient outcomes and survival rates.

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ANTIBIOTIC RESISTANCE IN CANCER PATIENTS- EXPANDING ISSUES AND POTENTIAL ELUCIDATIONS

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ANTIBIOTIC RESISTANCE IN CANCER PATIENTS - EXPANDING ISSUES AND POTENTIAL ELUCIDATION

INTRODUCTION

Infections occur frequently in cancer patients and utilization of effective antibiotics to prevent and cure bacterial infections. Antibiotic resistance in patients with Cancer increases the risk of sepsis, sepsis-related death, and sepsis-related healthcare expenses. **ESKAPE** pathogens are a group of six bacteria (Enterococcus faecium, Staphylococcus aureus, Klebsiella aureus, Klebsiella, Pseudomonas aeruginosa, and Enterobacter spp.) that are commonly linked to antibiotic resistance in the hospital setting, according to Rice et aureus, Klebsiella emphasis on present research addressing ESKAPE infections that are resistant to antibiotics, including risk factors, antibiotic usage, therapy, and prevention in cancer patients.

AIM To minimize the resistance due to antibiotics in cancer patients.

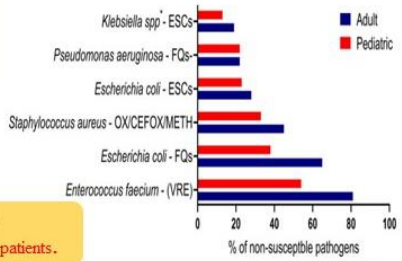
METHODOLOGY

We used data from the National Healthcare Safety Network (NHSN) adult and pediatrics antibiotic resistance reports from 2015 to 2017 to show differences in the proportion of central line-associated bloodstream infections caused by ESKAPE pathogens that tested no susceptible to particular antimicrobial agents.

RESISTANT MICROORGANISMS	RISK FACTORS	POPULATION STUDIED
Enterococcus faecium	Prior use of fluoroquinolones, Prolonged antibiotic exposure	BSI episodes in patients with cancer
Klebsiella pneumoniae	hospital-acquired infections	Respiratory infections in patients with lung cancer
Acinetobacter baumannii	Previous carbapenem exposure	Patients with malignant haematology
Pseudomonas aeruginosa	Prior therapy with piperacillin-tazobactam, Fluoroquinolone prophylaxis	BSIs in patients with hematologic malignancies, neutropenic patients
Staphylococcus aureus	hospital-acquired infections	Patients with erythrodermic cutaneous T-cell lymphoma

DISCUSSION

A recent survey in the United Kingdom found that 46% of oncologists in the United Kingdom are concerned that chemotherapy as a cancer treatment may become challenging due to drug-resistant infections



Adult cancer patients appear to have much greater rates of vancomycin resistance in E. faecium and fluoroquinolone nonsusceptibility in Escherichia coli than pediatric patients.

CONCLUSION-Development of narrow-spectrum antibiotics is considered an attractive approach to overcoming antibiotic-resistant bacterial infections because more specific antibiotics can reduce the selection pressure in non-targeted pathogens. Examples of experimental narrow-spectrum antibiotics for ESKAPE pathogens include bacteriophages, monoclonal antibodies, bacteriocins, and antisense molecules, such as peptide-conjugated phosphonodiamidite morpholino oligomers. The cost of cancer-related neutropenia hospitalization was $24,770 per stay for adults and $26,000 per stay for children in the US.

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Presented by
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IMPACT OF ZINC SUPPLEMENTATION IN TUBERCULOSIS PATIENTS

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IMPACT OF ZINC SUPPLEMENTATION IN TUBERCULOSIS PATIENTS

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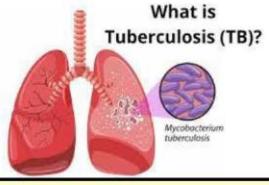
ZINC IN COMPARTAMENTALIZING THE Fe LEVELS

Iron is necessary for mycobacteria as a growth factor. Iron is a cofactor for several enzymes involved in its metabolism, including superoxide dismutase (SOD), the tricarboxylic acid cycle (TCA), pyrimidine synthesis,3-deoxyD-arabino-heptulosonate-7-phosphate synthase, and at least forty other enzymes.

To acquire iron (Fe), Mycobacterium tuberculosis (Mtb) expresses high-affinity Fe+3-specific siderophores for scavenging Fe from host insoluble and protein-bound iron-like transferrin, lactoferrin, ferritin, and haemoglobin–haptoglobin. Mycobacterium tuberculosis by its specific membrane protein and Fe transporters can internalize Fe within cell cytoplasm. With infection by Mtb, activity of transferrin, the most dynamic Fe carrier gets setback with a decrease in its level due to infection and also by a decrease in its ability to leave out Fe in bone marrow cells through specific cell surface transferrin receptors. Thus, major decompartmentalization of Fe in host tissues sets in.



TUBERCULOSIS:

Tuberculosis (TB) defined as an illness that occur via Mycobacterium tuberculosis in which different organs are involved such as lungs, kidneys and bones. In order to treat TB, multi drug therapy is preferred, these drugs have several side effects include hepatotoxicity, nephrotoxicity, ill effects on bones and also cause malnutrition.

ZINC A VITAL MICRONUTRIENT

Some studies have revealed that zinc supplementation resulted in earlier sputum conversion in patients than in the untreated group. But there hasn't been any reliable evidence to yet. Serum albumin, Hb, and BMI levels—all of which are affected by MTb—have significantly decreased. when given zinc supplements that have been optimized

MECHANISM OF ZINC IN COMPARTMENTALISING THE Fe LEVELS IN TUBERCULOSIS

Zinc a redox agent, acts as an antioxidant

↓

Stabilises membrane structures, upregulating expression of metallothionein, protecting protein sulfhydryl group, suppress the formation of superoxide's by competing with Fe and Cu in cell membrane and thiol group binding

CONCLUSION:

Nutritional supplementation might be a versatile technique to promote rapid recovery in TB patients. Zinc supplementation along with standard treatment regimen has reduced the bacterial load, improving the disease condition. The DOTS regimen does not include zinc supplementation, yet it is known that these can influence how a disease develops. Further similar research is necessary because of the lack of information on the effect of zinc supplements in enhancing antitubercular therapy efficacy. Their findings potentially result in a breakthrough in TB therapy in age to come

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