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Research Article

Medication Adherence of Antibiotics Used in Vulnerable Population at Selected Tertiary Care Hospital in Andhra Pradesh

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Abstract

Aim: To determine the medication adherence towards antibiotics in vulnerable populations at selected tertiary care hospital in Andhra Pradesh.

Materials and methods: This prospective study was carried out at selected tertiary care hospital. A total of 551 vulnerable inpatients were studied for medication adherence for antibiotics prescribed. The vulnerable inpatients included in the study are pediatrics, pregnant women, geriatrics and other vulnerable patients. Socio-economic status of the patients was measured using Modified Kuppuswamy socio-economic status scale 2020 and based on this scale the patients were found to be of lower middle, upper lower and lower class. In this study the medication adherence was assessed using Morisky Medication Adherence Scale (MMAS-8). Hartwig scale was used to measure the ADRs. Socioeconomic status was correlated with medication adherence to measure the extent of association.

Results: Cephalosporins were the most commonly prescribed antibiotics in patients. The average medication adherence among the population was found to be 6.54 on the scale of 8 which suggests the adherence was medium or moderate. Geriatric patients showed the lowest adherence as compared to the other groups. A total of 56 ADRs and 57 drug interactions were reported in the study

Conclusion: Medication non-adherence is depended on the patient factors and other complications that might occur. It is also depended on the socio-economic status of the patients. Therefore, a close counselling and monitoring is also required for inpatients. This study is on inpatients which reveals non-adherence; hence we now know what to expect on the adherence among outpatients who are rarely monitored closely.

Keywords: Antibiotics; Medication adherence; MMAS-8; Modified kuppuswamy scale 2020; Hartwig's Scale

Introduction

Medication adherence usually refers to whether patients are taking their medication as prescribed or not. The major predictors for medication non-adherence are high pill burden, complex dosing schedule, poor knowledge of disease and treatment, chronic illness, duration of treatment, adverse effects, taking alternative medicines, socio-economic status and high cost of prescribed drugs. This medication adherence can be assessed using Morisky Medication Adherence Scale (MMAS-8) [1]. It has proved to be a valuable resource to measure the adherence using a series of questions that involves factors influencing adherence, such as forgetting to take medications or discontinuing medications without guidance. If the score is less for a patient, then they are struggling with no adherence and if a patient score higher then it shows they are more adherent to the treatment [2]. Surprisingly, non-adherence is also possible among inpatients, especially the ones where the oral administrations are taken care by the attender of the patients. This can be observed among patients who are from a socio-economically weak background. Modified Kuppuswamy socioeconomic status scale measures socioeconomic status of a person based upon education, occupation and monthly income [3]. From these scorings of medication adherence, clinicians and health organizations can identify underlying issues that prevent patients from taking their medications correctly, if at all. Total MMAS – 8 scores range from 0-8 and have been categorized into three levels of adherence; high adherence (8), medium adherence (6 to <8), low adherence (<6) [4]. Antibiotics should be consumed as prescribed by the doctors and entire course of therapy has to be completed to have complete eradication of bacterial infection. Generally, in our society patients stop taking antibiotics when they observe relief in clinical symptoms but it's not the ideal way because the patients might be still infected and if entire course of therapy of antibiotics are not taken then this will lead to bacterial resistance or antibiotic resistance. Antibiotics controls the infection and can cause resistance of an organism against it if not properly consumed based upon prescription [5]. Antibiotic misuse can lead to unnecessary expenditure, overuse of health services, unnecessary side

Formulation and Evaluation of Fast Dissolving Orodispersible Films of Carvedilol

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ABSTRACT:

Orodispersible films (ODF) are an innovative and transformative approach novel drug delivery systems to achieve patient compliance and to overcome certain challenges of conventional dosage forms. ODF's are convenient to administer in patients with impaired swallowing, as ODF can be easily consumed without water without swallowing or chewing. Carvedilol bioavailability is low due to hepatic first pass metabolism. The present research work was focused on increasing bioavailability by formulating carvedilol ODF. The ODFs of carvedilol are prepared by solvent casting method using film forming polymer hydroxy propyl methyl cellulose (HPMC) and evaluated for all respective parameters such as physical appearance, weight variation, thickness of film, folding endurance, surface pH, swelling property, water permeation test, tensile strength, disintegration, drug content and in vitro dissolution studies. The formula was optimized by trial and error method. From the prepared formulations, the best formulation was selected based on the results obtained from evaluation tests.

Keywords: Orodispersible films, Carvedilol, bioavailability, HPMC

I. INTRODUCTION

Mouth-dissolving strips are recently developed for immediate release of drug in the mouth without the need of drinking water and chewing which helps in improving the bioavailability of drugs and is mainly focussed for ease of administration, especially for patients who are mentally ill and in coma state[1, 2]. The drug is prevented from first pass metabolism as it enters into systemic circulation directly with rapid onset of action[3, 4]. The release of the active ingredients from the films can be controlled by selecting the polymer type, concentration and by adjusting the levels of different ingredients of the formulation[5-7]. Carvedilol, a β-blocker is indicated for hypertension, heart failure and angina. Oral intake has low bioavailability due to first pass hepatic effect. Thus orodispersible film is best choice for

Effect Of Natural And Synthetic Polymers On The Controlled Release Of Nevirapine Mucoadhesive Microspheres

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Abstract

Background: Short-half-life drugs must be dosed often since they are quickly excreted from the circulation and readily absorbed from the GIT. In order to gradually release the medication into the GIT and sustain a constant drug concentration in the blood for a longer length of time, oral controlled-release formulations have been developed.

Aim: The current study aim is to create an oral controlled release dosage form that not only delays drug delivery but also delays the passage of the dosage forms through the stomach and small intestine, allowing for the complete release of the drug over the chosen time.

Method: In the current study, natural and synthetic polymers were used in various ratios to prepare and assess a microparticles drug delivery system for Nevirapine. The study includes 12 different Nevirapine microsphere formulations that were prepared using the ionotropic gelation technique

Results: The results revealed that entrapment efficiency depends on the drug-to-polymer ratio. According to the particle size study, all formulations produced particles with sizes between 705.21, and 935.45 µm, which is appropriate for oral administration of the formulation. The formulation F8 was selected as the best one out of the twelve formulations because it had a good drug release profile in 12 hours (98.74%) and good entrapment efficiency (90.48%), when HPC and sodium alginate were combined (1:2).

Conclusion: Formulation F8, which showed higher entrapment efficiency and provides the desired drug release rate. The F8 formulation was the best and optimized of all the remaining formulations.

Keywords: Controlled Release Drug Delivery System, Drug Entrapment Efficiency, Hydroxy Propyl Cellulose, Micro particulate Drug Delivery System

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1. Introduction

Most researchers agree that the micro particle delivery method is a safe and effective way to deliver medication to specific target sites while maintaining the desired concentration in the area of interest. [1] A microcapsule is a sphere-shaped particle with a diameter of between 50 nm and 2 mm and a core material inside. In the strictest sense, microspheres are spherical empty particles.[2] On the other hand, microcapsules and microspheres are frequently used interchangeably. In addition, certain similar terms are used, such as "micro beads" and "beads," which are used interchangeably.

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FORMULATION DEVELOPMENT AND EVALUATION OF POLYHERBAL NATURAL FACEPACK FOR SKIN AILMENTS

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Abstract

The main aim of this present study is to formulate an herbal poly face pack for the enhancement of the beauty and to treat acne, tan, wrinkles and dryness of the skin by using different parts of the locally available herbal plants like marigold, guava, amla, chana, cabbage, bittergourd, carrot and lotus. The prepared formulation was evaluated for different parameters of organoleptic properties, Physico-chemical properties, phytochemical constituents, stability studies and also for irritancy test. The formulation is having excellent flow property and also having a particle size of 20-25µm and found free from irritation of the skin. This face pack is free from toxicity as well as side effects and has not showed any allergic reaction after application. This formulation was also beneficial in terms of economy. From this study, it was concluded that this formulation can be used as a cosmetic product by humans for enhancing the beauty.

Keywords: *Cosmetics, irritation, Anti-oxidant, flow, application.*

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PHARMAKEFTIKI, 34, IV, 2022 | 150-155 RESEARCH ARTICLE

Antioxidant and Antiangiogenic Activities Assessementof *Abutilon indicum* Ethanolic Root Extract

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KEYWORDS:
Antioxidant, Antiangiogenic, Chick chorioallantoic membrane assay, neovascularization and Abutilon indicum

ABSTRACT

The current study aims to identify the antioxidant and antiangiogenic effects of the ethanolic root extract of Abutilon indicum. Antioxidant activity was evaluated against a range of free radicals, including nitric oxide scavenging and hydroxyl radicals tests, using ascorbic acid as a standard. The chorioallantoic membrane of the chick embryo is the most popular in vivo assay for assessing antiangiogenic effectiveness (CAM). The ethanolic root extract of Abutilon indicum has a significant antioxidant status as evidenced by its IC50 values of 21.4 ug/mL for nitric oxide radicals and 22.3 ug/mL for hydroxyl radicals. The results are on par with ascorbic acid's. The percentage of inhibition of antioxidant activity was estimated by computing IC50 values. It prevents neovascularization, which is probably connected to the dose-dependent decrease in the development of capillary networks (50 to 150 g/egg). The investigation's findings demonstrated that the chorioallantoic membrane had a significant antiangiogenic effect. The plant extract has shown effective free radical scavenging action, as indicated by their percentage inhibition. It exhibits considerable antiangiogenic properties as well, which may be the reason for its historical use as an anticancer medication.

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Introduction:

The tiny herb *Abutilon indicum is indigenous to tropical and subtropical areas. The roots and leaves of this plant are used to treat fevers, and it is also a valued ornamental and medicinal plant. It has been widely distributed and several tropical islands consider it invasive.* Tumor angiogenesis is the outcome of an angiogenic imbalance in which proangiogenic factors exceed antiangiogenic factors[1,2]. Angiogenesis is the process by which new blood vessels form. All angiogenic processes in adults are harmful, with the exception of a few physiological process-

A REVIEW ON DRUG TARGETS IN MYCOLIC ACID BIOSYNTHESIS PATHWAY FOR TUBERCULOSIS TREATMENT

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Abstract:

Mycobacterium tuberculosis is the causative agent of the infectious Disease tuberculosis. Mycolic acid, a major constituent of the outer layer of the cell wall of M. tb, is crucial to the survival of the organism and the preservation of the integrity of the cell membrane. The mycolic acid pathway's synthesis involves numerous stages and enzymes. Cell wall biosynthetic enzymes, such as those involved in mycolic acid production and modification, are becoming more and more likely therapeutic targets in *M. tuberculosis*.The pathogenicity, liveliness, and innate antibiotic resistance of M. tb cell walls depend on the mycolic acid methyltransferases.In this review We analyzed the novel and developing inhibitors of this pathway identified in the post-genomic age of tuberculosis drug discovery, several of which show significant promise as selective tuberculosis treatments.

Keywords: Mycolic acid, tuberculosis, pathogenicity, vitality.

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REVIEW ARTICLE OPEN ACCESS

A Review on the Prevalence of Cervical Dysplasia in Various Geographical Locations

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ABSTRACT

Cervical dysplasia is an unusual growth of cells that occurs on the cervix surface especially in between the uterus and vagina. It is the most common cancer in women that ranks second globally. In 2018, about 570000 women were diagnosed with cervical dysplasia worldwide. There are several factors that affect cervical dysplasia as per worldwide estimation. Cervical dysplasia caused mainly due to human papilloma virus. The main aim of this review mainly focuses on the significant epidemiological factors associated with cervical dysplasia in various geographical locations.

Introduction

Cervical dysplasia is an unusual growth of cell occurs on the cervix surface especially in between the uterus and vagina. Cervical cancer is the most common cancer in women that ranks second globally. In 2018, about 570000 women were diagnosed with cervical dysplasia worldwide. There are several factors that affecting cervical dysplasia as per worldwide estimation and the main cause is due to Human Papilloma Virus (HPV).

Cervical dysplasia is an abnormal change in the cells around cervix. Based on the condition of the abnormal cells, it can be differentiated into mild, moderate and severe. Having cervical dysplasia does not mean that a person has cancer or will ever develop cancer. But in some cases, failure in the early identification of the cervical dysplasia may lead to cervical neoplasia. The most common age group population prone to have this condition was 25-35 years. HPV virus is a sexually transmitted virus. Several strains of HPV virus exists in which some are with low risk and some are with high risk. In majority of cases, our immune system fights against these HPV and reduces infection. But in some situations HPV persist over time. After a period of time it develops into cancer in cervix.

HPV 10 and HPV 18 are HPV strains that cause high risk. Epidemiological factors include multiple sexual partners, cigarette smoking, weakened immune system, early child birth before the age of 16 and using immunosuppressant drugs. In Pap smear detection, lesions can be observed in squamous intraepithelial cells both in high grade and low grade. Detection in Colonoscopy leads to determination of degree of abnormality. In the aspect of biopsy, precancerous cells were observed in the tissue part of the cervix and it is graded as cervical intraepithelial neoplasia (CIN). CIN-1 (mild) does not require any treatment where as in case of CIN-2 (moderate) and CIN-3 (severe) requires cryosurgery, laser surgery, loop electrosurgical excision procedure, cold knife conization and hysterectomy. The world wide HPV prevalence in cervical carcinomas is 99.7% [1]. Multiple sexual partners is one of the risk factors that can cause cervical cancer through human papilloma virus [2].

Asia

Asia ranks in the 4th place of cervical cancer prevalence. The epidemiological factor in Asia is most probably human papilloma virus (particularly East Asia). HPV-16 is the most common strain of HPV that cause cervical cancer in this region. Both from Asia

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A Review on Cerebrotendinous Xanthomatosis (CTX): A Rare Autosomal Recessive Inherited Disease

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ABSTRACT

Cerebrotendinous Xanthomatosis (CTX) is a rare autosomal recessive disease which is caused due to the mutation of CYP27A1 gene that encodes sterol 27-hydroxylase enzyme. Due to the pathogenic variation in this enzyme the bile acid synthesis pathway gets disturbed which results in the production of bile acid intermediates especially cholesterol & bile alcohols and these gets accumulated in various parts of the body resulting in formation of xanthomas. There is no permanent cure for CTX but the early detection and treatment with cholic and chenodexycholic acids have proven to reduce the severity of the condition. CTX is a genetic disease which generally prevails from the early childhood and lasts throughout the life. Thus, proper genetic counseling is recommended to help families understand the genetics and natural history of CTX, and also to provide the psychosocial support.

Introduction

Cerebrotendinous Xanthomatosis (CTX) also called as Cerebral Cholesterosis, is a rare inborn error of bile acid metabolism due to the homozygous mutation of the hepatic mitochondrial enzyme 27-sterol hydroxylase (CYP 27) which makes it an autosomal recessive inherited disease. In general, CTX is a lipid storage disorder associated with the deposition of a steroid known as cholestanol in the brain and other tissues. It is mainly characterized by elevated levels of cholesterol in plasma but with normal total cholesterol levels, progressive cerebellar ataxia (beginning of puberty), juvenile cataracts, juvenile or infant onset chronic diarrhea, childhood neurological deficit, tendineous or tuberous xanthomas, osteoporosis, coronary heart disease and progressive neuropsychiatric disturbances. CTX is associated with considerable variability in clinical manifestations among patients and even within same family.

CTX is a rare disease which has been observed more among the females than in males. Mainly the treatment option for this condition is replacement with chenodeoxycholic acid (CDCA) in the early stages of the disease and it has been reported to be an effective way to improve or prevent the clinical symptoms of CTX. In this article, we mainly reviewed the current underlying pathogenesis, clinical manifestations, diagnosis and management of CTX [1,2].

Pathophysiology

The *CYP27A1* gene encoding sterol *27-hydroxylase* is the key enzyme in the bile acid synthesis pathway, and mutation of this gene results in CTX. The classical bile acid synthesis pathway is initiated by *7alpha-hydroxylation* of cholesterol and is catalyzed by the rate limiting enzyme cholesterol *7alpha-hydroxylase*. Also, there is an alternative pathway which is initiated by *27-hydroxylation* of cholesterol which is done by *sterol 27-hydroxylase*. This sterol *27-hydroxylase* enzyme facilitates the removal of cholesterol from the body through its conversion into bile acids i.e chenodeoxycholic and cholic acid.

In patients with CTX, pathogenic variation of the gene results in lack of sterol *27-hydroxylase* enzyme due to which the bile acid pathway intermediates remains unused along with components like cholestanol and bile alcohols. The negative feedback effect of CDCA on cholesterol *7alpha-hydroxylase* is inhibited and thus it accelerates these metabolic

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CASE REPORT OPEN ACCESS

A Case Report on Non Ischemic Dilated Cardiomyopathy

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ABSTRACT

Non-Ischemic Dilated Cardiomyopathy is a condition in which the dilation of left ventricle occurs. Due to this condition motor movement of the ventricles (contraction) of heart decreases which results in less efflux of oxygenated blood from the heart to the body. The clinical manifestations include chest pain, SOB, progressive dry cough, fatigue and restlessness. This is a case of 18yr male patient diagnosed as NIDCM with the above symptoms. His clinical findings (ECG, 2D ECHO) were abnormal and for the proper management of this case drugs like anti-hypertensive, inotropes, diuretics and anti-allergic were prescribed along with some non-pharmacological treatment.

Introduction

Non-Ischemic Dilated Cardiomyopathy (NIDCM) is a type of heart muscle disease that causes abnormal enlargement of left ventricle, that prevents the heart from pumping blood effectively and thus produces severe complications. The etiological factor of NIDCM is still unknown [1,2].

According to a study 40% of young individuals suffers from NIDCM and comparatively male population are more prone than females. In the early stages of NIDCM there might be no signs and symptoms but as the condition advances gradually signs and symptoms like breathlessness with activity or at rest, swelling of legs, cough while laying down, fatigue, rapid heartbeats along with chest discomfort, dizziness, lightheadedness and fainting are observed.

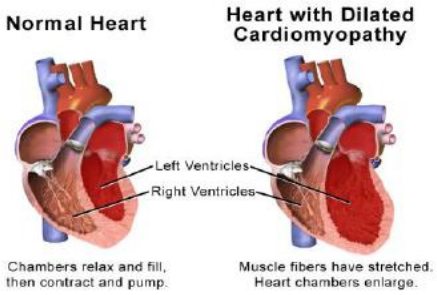

Fig.1: Comparison of normal heart with DCM heart

The risk of NIDCM is significantly higher in patients with long term high blood pressure, obesity, past heart attack, coronary artery disease or an infection in the heart [3-5].

Case Report

A male patient of 18 years old was observed with the following chief complaints that includes progressive dry cough, shortness of breath, malaise and pain in lower limbs. The patient had a history of jaundice 1year ago and led him to drastic loss of weight. There were no complaints of fever, chest tightness and gastric pain. There is no past history of diabetes mellitus, hypertension, tuberculosis and hypothyroidism or hyperthyroidism. He doesn't have any past medication history and patient is a non-smoker and a non-alcoholic. The vitals of the patient were taken and demonstrated in table 1.

Table.1: Vitals

Vitals	Values
Blood pressure	140/110 mmHg
Pulse rate	108/min
Temperature	Afebrile
Respiratory rate	30/min

BIOLOGICAL EVALUATION OF ANTIBACTERIAL, ANTIOXIDANT, HYPOGLYCEMIC AND HYPOLIPIDEMIC ACTIVITIES OF *MIMOSA CATECHU* BARK

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Abstract:

Presently world is focusing on herbal medication to cure various important ailments, validating the plants for medicinal usage is very much increasing. *Mimosa catechu* belongs to the family Mimosaceae familiar as black cutch explored by local natives using for various medicinal uses. The present study was focused on exploring its activities for antibacterial, antioxidant, hypoglycemic and hypolipidemic properties. Antibacterial effect (Zone of inhibition) free radical scavenging activity adopting various methods, anti-hyperglycemic effect in alloxan-induced diabetic rats and hypolipidemic effect by estimating important lipid profiles were studied. The determination of serum insulin level and histopathological studies of pancreas was also performed. The detailed research study revealed *mimosa catechu* bark possesses significant antibacterial, antioxidant, hypoglycemic and hypolipidemic potential and the research study could drop establish information for the possibility to develop medicinal preparation for the treatment of all these mentioned ailments.

Keywords: *Mimosa catechu*, antibacterial, antioxidant, hypoglycemic, hypolipidemic and Histopathology

1. INTRODUCTION

Mimosa catechu is an important medicinal plant used in Ayurveda for many diseases. Local natives use this plant heart wood and bark for cough, pruritus, skin diseases, helminthiasis, ulcers, wounds, fever and for asthma. The important chemical constituents' reported[1-6] in the heart wood are catechin, epicatechin, catechutannic acid, catechin tetramer, diacatechin, catechuric acid, kaempferol, toxifolin, isorhamnetin, quercitinin and quercetin.

In the recent decades the use of traditional medicinal plants for treatment of diabetes and hyperlipidemia have acquired prime importance and search for medicinal plants for academic research and pharmaceutical industry is of much importance in present research scenario. As no much scientific data available and not much pharmacological work is reported on *mimosa catechu* bark, hence the researchers have selected to explore the various biological properties.

2. MATERIALS AND METHODS

2.1 Procurement and identification of plant:

The bark of plant was collected from a village Rampa Yerrampalem which is 28 kms away from Rajahmundry during the months of November/ December. The plant specimen was identified and authenticated as *mimosa catechu* by taxonomist Dr. S.B.Padal.

2.2 Preparation of the Extract:

Mimosa catechu bark was dried under shade for two weeks coarsely powdered and stored in tight container the powder was extracted with ethyl alcohol by maceration followed by hot percolation process. The extract was concentrated by drying in a dessicator.

2.3 Drugs, Chemicals and Equipment:

All chemicals, reagents and drugs used are of standard quality. DPPH procured from Research lab fine chemicals, Mumbai, Gallic acid was a gifted sample from Lupin Pharma, chemicals are procured from Sigma Chemicals, Glibenclamide gifted sample from Tablets India Ltd., standard glucose estimation kits and biochemistry analyzer procured by Robonik India Pvt Ltd.,

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A Case Report on Neurocysticercosis in Children

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ABSTRACT

Neurocysticercosis is a parasitic disease which is caused by the incidental ingestion of *Taenia solium* eggs (pork tapeworm) through the contaminated food. Neurocysticercosis shows its effect on the nervous system and it has been the main cause of acquired epileptic episodes and it was majorly seen in developing countries, and it is more prevalent in some parts of subcontinents like Asia and Sub-Saharan Africa. It was reported that large group of US immigrants are known to suffer from this disease. The major factor which can cause neurocysticercosis is poor sanitation and unhygienic food. The patients may have symptoms of epilepsy, headache, memory problems and thinking problems. Cysterici undergoes different changes in the brain, subarachnoid space and spinal cord leads to Neurocysticercosis. Neurocysticercosis is preventable, and probably eradicable. Eventually, the cysts either resolve or form a calcified granuloma, which is associated with seizures if it is located in the brain. It is estimated that 30% cases will experience epilepsy.

Keywords: Neurocysticercosis, Epilepsy, Immune attack.

INTRODUCTION

Neurocysticercosis affects mostly cerebral cortex and then cerebellum. Mostly pituitary gland does not involve in causing neurocysticercosis. But in some conditions, pituitary gland involves and forms a branch like structure called racemose neurocysticercosis leads to pituitary hormone deficiency.[1] Cysticercosis is mainly caused by tapeworm which contains 2 species *Taenia saginata* or beef tapeworm and *Taenia solium* or pork tapeworm. Two diseases caused by tapeworm are taeniasis and cysticercus larva of tapeworm is also called as cysticercosis. Mainly pork tapeworm cause both Taeniasis and cysticercosis but beef tapeworm can cause only Taeniasis.

Life cycle of *Taenia solium* starts from undercooked pork that contains cysticercus larva of teniasolium when a person consumed that cysticerus larva of pork it reaches to GIT it changes its shape to bladder worm then it reaches to intestine again it changes its shape consists of scolex, neck, rostellum, 2 rows of hooks and 4 suckers. The body of tapeworm consists of strobila consists of both male and female sex organs. Strobila has 3 developed proglottid, in which the first proglottid is not fully developed, the second proglottid is fully developed and the last proglottid contains branches of eggs. These eggs of uterine branches proglottid releases egg into faeces. These eggs are consumed by secondary host (pig). Eggs changes its form in GI tract called encysted hexacanth then changed into hexacanth in intestine enters into blood stream changes into cysticerus larva in muscle that is again transmitted to primary host (human being). When humans taken contaminated food containing eggs of *Taenia solium* forms an intermediate host. Neurocysticercosis changes its shape based on the hosts condition.[2]

Cyst cerci changes its shape in brain upper tissue, sub arachnoid space and spinal

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Case Report

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Case study: interstitial lung disease with pulmonary arterial hypertension and COR Pulmonale

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Abstract

Interstitial lung diseases (ILDs) encompass a diverse group of conditions characterized by inflammation and fibrosis of the lung tissue, which can lead to impaired lungs function and respiratory failure. Pulmonary arterial hypertension (PAH) and cor pulmonale are common complications of ILDs, resulting from increased resistance in pulmonary circulation and right heart strain. ILDs and PAH and cor pulmonale are often difficult to diagnoses as the symptoms can be non-specific and overlap with other respiratory diseases. Diagnostic tool such as pulmonary function tests, imaging studies and right heart catheterization are used to establish a definitive diagnosis and assess to disease severity. This case study summarizes the patient case of ILDs with PAH and cor pulmonale, including the underlying pathophysiology, diagnostic tool and management strategies. Additionally, we discuss the challenges in diagnosing and managing ILDs with PAH and cor pulmonale, as well as potential future direction in research and treatment.

Keywords: Interstitial lung diseases, Pulmonary arterial hypertension.

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Introduction

Interstitial lung disease (ILD) refers to a group of lungs diseases that affect the interstitium, which is the tissue that surrounds and supports the air sacs (alveoli) in the lungs. The interstitial is composed of network of tiny blood vessels, elastic fibres, and collagen fibres that are responsible for exchanging oxygen and carbon dioxide between the lungs and the blood stream [1, 2].

ILDs can be associated with other medical conditions, such as connective tissue diseases like rheumatoid arthritis or systemic sclerosis, or as a result of infection, such as COVID-19. The treatment and prognosis for ILDs depend on the specific type and severity of disease, as well as the underlying cause [3].

ILDs have been recognized for many years, and the first descriptions of the disease date back to the early 20th century. However, the term 'interstitial lungs disease'' was not widely used until the 1980s, when advances in imaging and diagnostic techniques allowed for better characterization and differentiation of various types of ILDs [4].

Since then, there have been significant advancements in the understanding of the pathophysiology, diagnosis and treatment of ILDs and ongoing research continues to shed light on the complex mechanisms underlying these diseases. While ILDs remain a significant challenge in respiratory medicine, improved understanding and management of these conditions have led to improved outcomes and quality of life for affected individual [5].

Lung tissue becomes scarred as a result of interstitial lung disease. Scarring is a natural occurrence that cannot be reversed. Long -term exposure to some hazardous compounds, autoimmune disease, specific drugs, and other medical disorders and disease also contribute to scarring. The pathologic sequence involves severe inflammation and fibrosis that affect the parenchyma (alveoli, alveolar duct, and bronchioles) in

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A Case Study: Henoch-Schonlein Purpura in a Geriatric Patient with Gastrointestinal Involvement

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Abstract

IgA-mediated immune vasculitis known as Henoch-Schonlein purpura affects the small blood vessels in the joints, kidneys, GI tract, skin, and, less frequently, the brain and lungs. The present case report describes a 62-year-old female patient with Henoch-Schonlein purpura (HSP). HSP is a type of vasculitis that affects small vessels and is characterized by purpura, arthritis, abdominal pain, and kidney involvement. In this case, the patient presented with a rash with red lesions on the upper and lower limbs, crusted lesions on both lower limbs, and acute onset abdominal pain with hematochezia. Endoscopy revealed diffuse ulcerations in the stomach, duodenum, and right colon (fig.1). Biopsies revealed a leukocytoclastic vasculitis in the skin (fig2) and gastrointestinal tract. The patient had a history of hypertension and smoking, and laboratory investigations revealed leucocytosis, anaemia, and electrolyte imbalances. The diagnosis of HSP was made based on the clinical presentation, laboratory findings, and biopsy results. The patient was treated with a combination of steroids, antibiotics, and supportive care, which led to significant improvement of symptoms and laboratory findings. Steroid therapy was given according to guidelines for the treatment of HSP, and tapering the steroid therapy helped to improve gastrointestinal symptoms. The case report highlights the importance of careful monitoring and appropriate treatment of HSP in geriatric patients, as well as the potential benefits of immunosuppressant therapy.

Keywords: Henoch-Schonlein, leukocytoclastic vasculitis, gastrointestinal tract, Eosinophilic Colitis, use of steroid like, Dexamethasone.

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Case Report

A62-year-old female patient came to general medicine department with chief complaints of rash with red lesions on upper and lower limbs since 10 days and crusted lesions on both lower limbs 10 days back (fig3) and abdominal pain since 4 days.

Patient was apparently alright 11 days back. There is history of neck pain for which patient took some medication Following which she developed red maulo-vesicular lesions that gradually crusted ever both lower limbs since last 10 days. Red lesions over both upper limbs since 4 days.Abdominal pain acute onset 4 days duration,colicky in nature a/w Franks blood loss per rectum (haematochezia) .she has a history of hypertension since 3yrs for which she is taking unknown medication. She has history of smoking chutta since childhood 5-6 pack years.

Observation

Under general physical examination, blood pressure was found to be 140/90mmHg, pulse rate 85 beats per minute, respiratory rate 16 per minute and temperature found to be afebrile. On systemic examination cervical lymphadenopathy present, diffuse tenderness in right ileac and hypogastric region, palpable purpura of varying size developed at proximally from both feet to thighs and legs with a burning pain and with On endoscopic examination ileocolonic ulcer was observed and multiple biopsies from ileal and caecal ulcer was

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Case report of drug induce erythroderma in diabetic patient

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Abstract

Erythroderma, a severe form of skin reddening, is often difficult to diagnose and is usually caused by underlying inflammatory skin conditions. In this case report, we present the management of a patient diagnosed with drug-induced erythroderma. The patient developed generalized redness and scaling 21 days after receiving an unknown injection for pain from a local pharmacy. A thorough history and clinical examination were conducted, and drug-induced erythroderma was suspected. The patient was treated with a combination of mid-potency corticosteroids, liquid paraffin, recombinant human epidermal growth factor, and oral antihistamines. The patient recovered after strict diabetic diet control and was discharged.

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Drug Induse, Erythroderma, Diabetic Patient Erythoderma, ADR Due to Polypharmacy.

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Introduction

Erythroderma is a skin disorder that is characterized by the scaling of the skin on a generalized level. This condition characterized by diffuse redness and scaling of more than 90% of the body surface is present. Skin disorders can be caused by a variety of factors, including medication, an unknown cause, and underlying conditions affecting the skin or other areas of the body.

Erythroderma is a chronic condition associated with a range of signs and symptoms, including intense pruritus and scaling, and can have life-threatening consequences if not diagnosed and managed appropriately. Mortality rates associated with Erythroderma are generally low, but morbidity is considerable. Erythroderma consists of a risk of loss of life because of its metabolic burden and aspect results, and accordingly it's far critical to identify the cause of the situation so one can offer appropriate care. A comprehensive investigation need to be performed to determine the underlying cause of the symptom, as it is able to be related to numerous pores in skin and systemic illnesses. Due to the complexity of its aetiology, the management of this skin condition remains challenging.

Here we report a rare case report of erythroderma, seborrheic dermatitis due to the unknown medication injection days before for pain on local pharmacy store which ultimately result into redness scaling all over the body starting from lips and patient was admitted in general medicine word , after getting treatment for 4 days patient request to go home but one day after again the patient develop the sever pruritus and scaling for which he is again admitted and started the treatment in general medicine word.

Case Report

A 74-year-old man came to the clinic with redness, scaling, and itching all over his body that had been present for 21 days. The symptoms started after he took an unknown injection for pain. Upon examination, the patient had a generalized scaling eruption on his scalp, trunk, hands, and extremities, but no signs of lymphadenopathy or pleural effusion. The patient's vital signs were stable with a heart rate of 89 beats per minute and blood pressure of 120/70 mmHg. The patient has a history of diabetes and hypertension, and is taking medication for both conditions (Metformin + Glimepiride and Telmisartan). Laboratory investigations showed elevated glucose levels and white blood cell count at the time of admission, but these improved by the time of discharge. No other significant abnormalities were noted in the results.

Laboratory investigations done revealed that

Investigation	Time of admission	before discharge	Normal
FBS(mg/dl)			70-100
Hb(gm/dl%)	220	117	13-17
WBC(cells/cumm)	12.6	12	4000-
PVC (%)	19400	13800	11000
RBC(mill/cumm)	39.0	29.5	40-50
EOSINOPHILS	3.3	4.52	4.5-5.5
TOTAL BILI(mg/dl)	4%	5%	1-4
CONJ.BILI	1.9	1.4	0.2-1.2
ALKALINE	0.6	0.5	0.0-0.3
PHOSPHATE(IU/L)	84	50	53-141
BLOOD			
UREA(mg/dl)	155	141	12.6-
CREATININE	3.0	1.2	42.6
(mg/dl)			0.5-1.4

Case Report

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A Case report on ischemic mitral regurgitation

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Abstract

Ischemic Mitral regurgitation is a leakage of blood backward through the mitral valve each time the left ventricle contraction. Patients are often ill with significant hemodynamic instability (Acute) needs urgent medical treatment. During normal cycle mitral valve (bicuspid valve) opens and closes normally. But in mitral regurgitation mitral valve does not opens and closes properly. The blood from right atrium moves to right ventricle then mitral valve does not closes properly leads to blood ejected back to right atrium which results in pulmonary edema and increases pulmonary hypertension. Ischemic Mitral regurgitation leads to complication of acute myocardial infarction and coronary artery disease.

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Ischemic, Mitral valve regurgitation.

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Introduction

Ischemic mitral regurgitation is characterized by ischemic heart disease due to changes in the left ventricular structure and function [1]. Ischemic MR is associated with decreases in long term survival in post MI and post revascularization patients. Ischemic regurgitation is divided into primary MR and secondary MR. Primary MR is not associated with any changes but in the secondary MR occurs due to LV remodeling by cardiomyopathy or coronary artery disease. MR results unbalance between increased and decreased closing of valves. It is classified into Type-1 normal occurs right dilatation, perforation and cleft. Type- II which is excessive occurs chordal or papillary muscle rupture and elongation, type-III restrictive which is therefore, characterized into sub types- IIIA-structural changes during systole and diastole, IIIB-functional changes during systole and diastole, calcification leaflets [2].

Mitral regurgitation is also called floppy valve. The blood flows from the left atrium to left ventricle then to aorta and then rest of the body but in the mitral regurgitation the blood glows from left ventricle to left atrium and then lungs leads to complications. The major causes of mitral valve regurgitation is LV dilation (enlargement), after myocardial infarction remodeling of post myocardial infarction, dilated cardiomyopathy it may be ischemic or non ischemic and rheumatic heart disease, endocarditis , papillary muscle dysfunction/ chordate tendinae and calcification. Mitral regurgitation is classified into acute MR in which papillary muscle can rupture leads to heart attack symptoms include pulmonary edema, CHF which is an medical emergency. Chronic MR leads to dilated ischemic cardiac myopathy symptoms include fatigue, SOB, pulmonary congestion/ edema [3].

Ischemic MR is present in 10% of patients with coronary artery disease, 70% of CHF in U.S is due to ischemic cardiomyopathy. IMR present in 1.6-2.8 million Americans.

Surgical procedure for IMR is downsizing annuloplasty ring, left ventricle remodeling, repair > 30% recurrence of moderate MR, moderate MR did not progress into severe MR. It is an disease of the ventricle need papillary muscle techniques like papillary muscle relocation.

Case Report

A 56 years old male patient presented to general medicine with chief complaints of pain in the anterior chest wall, sweating, cough, headache, palpitations and fever since 3 days.

Patient was apparently normal 3 days back, later developed chest pain associated with fever, chest pain from 2 days aggravated from yesterday night which is central and radiating to back and 2 episodes of loose stools and vomiting. Associated with profuse sweating, fever high grade associated with chills and rigors relieved with medication. Patient developed PND, orthopena and chest pain palpitations. Having 2 episodes of diarrhea with the shortness of breath. SOB from two days which is insidious in onset, gradually progressed from grade-II to grade IV from yesterday night. General examination found to be blood pressure: 140/80 mm hg, pulse rate: 112 BPM and SPO2:95%, respiratory rate: 18/min and temperature: a febrile.

Systemic examination found to be: cardiovascular system investigations –s_1s_2 present, pansystolic murmur present and early diastolic murmur present.

Laboratory investigations found to be: hemoglobin%: 11.4 grams %, R.B.C:3.65 millions/cumm, PCV :29.4%, MCV :80.7 cumm, MCH:31.2 p. gram, MCHC:38.7%, platelets:3.26lakhs/cumm, W.B.C :9000cells/cumm,

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(REVIEW ARTICLE)

Check for updates

Unconventional stationary phases: Nanomaterials, nanoparticles and the future of liquid chromatography

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Abstract

This review article discusses the impact of nanostructured stationary phases on liquid chromatography and separation science. These materials have revolutionized chromatography by enabling unprecedented levels of sensitivity, resolution, and applicability. Nanoporous silica, graphenic, monolithic, and nanoparticle-based phases continue to push the boundaries of biomolecular analysis, molecular diagnostics, and traceability testing. Nanostructured phases have made early detection of diseases, comprehensive profiling of proteomes, enhanced food origin traceability, and sensitive environmental monitoring possible. They facilitate isolation and analysis of biomacromolecules, extracellular vesicles, viruses, and trace constituents with high specificity and sensitivity even from minimal sample volumes. Furthermore, nanostructured phases are enabling integrated techniques, sensing capabilities, and responsive microdomains for advanced detection, purification, and separation of analytes. Continued progress in nanomaterial design, surface engineering, and micro-nanofabrication will lead to more sophisticated nano-LC approaches with translation across healthcare, food safety, materials analysis, and global sustainability. The review concludes that nanostructured stationary phases represent a pivotal frontier in chromatography and analytical sciences with tremendous potential to transform molecular diagnosis, precision medicine, origin traceability, and monitoring of health, food, and environment quality. Nano-LC promises to make comprehensive and minimally invasive molecular-level understanding more feasible, accessible, and impactful. These materials are an enabling technology with immense and far-reaching possibilities that will likely shape developments in analytical sciences and their use for years to come.

Keywords: Liquid Chromatography; Nanoparticles; Silica Gel; Proteomics; Molecular diagnostics

1. Introduction

Liquid chromatography (LC) relies on stationary phases with tailored characteristics for effective separation of analytes. Silica has traditionally been the most popular stationary phase material, but various inorganic and organic stationary phases have since been developed to suit diverse analyses [1].

In recent years, nanomaterials have emerged as promising candidates for stationary phases, with their unique properties enabling new levels of performance. Nanoporous silica, zirconia, titania, graphene and other nanomaterials are able to provide ultra-high surface areas, nanoscale confinement effects and facile surface modifications for superior sensitivity, resolution and applicability [2].

Nanoporous silica phases contain a network of nanopores that drastically increase solute retention and saturation capacity. Nanoparticle-coated and monolithic nanomaterials exhibit versatile and optimized characteristics based on their composition, nanostructuring and degree of hydrophobicity/hydrophilicity. Nanoporous graphene phases offer

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(RESEARCH ARTICLE)

Check for updates

Exploration of melt granulation technique for the development of entecavir monohydrate tablets using 3^2 factorial designs

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Abstract

This research work aims to fabricate fast-release tablets of entecavir monohydrate using a novel melt granulation technique and optimize the proportion of xylitol and mannitol using a 3^2 factorial design. entecavir monohydrate, a medication used for treating hepatitis B virus (HBV) infection, was used as a model drug. The fast-release tablets were designed to avoid fluctuations in plasma drug concentration and increase the bioavailability of entecavir monohydrate. The FTIR spectra of pure entecavir monohydrate were compared against polymers which had no interaction. The pre-compression and post-compression parameters were found to be within the desired range. The results of the drug release studies indicate that the formulations were able to release the drug within the desired range of 60-80% within 10 minutes. The study concludes that the melt granulation technique can be used to develop fast-release tablets of entecavir monohydrate with good compressibility, flow characteristics, and mechanical strength.

Keywords: Entecavir monohydrate; Fast disintegrating tablets; Melt granulation; Factorial design; Optimization.

1. Introduction

Melt granulation is a process used to produce granules by adding either a molten binder or a solid binder that melts during fabrication of the tablet. This technique can be broken down into 3 stages: wetting-nucleation, coalescence, and attrition-breakage (1). In melt granulation, a binder makes up 10-30% of the total weight of the fine particles. The binder should be meltable and its melting point should be between 50-200°C. Hydrophilic molecules are often used as binders for immediate-release dosage forms, while hydrophobic molecules are used for prolonged-release dosage forms (2). One advantage of melt granulation is that it doesn't employ solvents, and thus streamline the process and eliminates the need for drying. This can also reduce processing time.

Entecavir monohydrate is used in the management of Hepatitis B virus (HBV) infection(3). The objective of this research is to fabricate tablets of entecavir monohydrate utilizing the melt granulation technique and fine-tune the proportion of xylitol and mannitol until the formulation has optimal characteristics using 3^2 factorial design. Additionally, melt granulation leads to a uniform dispersion of fine particles and offers good stability at different pH levels and levels of moisture(4). The study intends to show that melt granulation can be employed to generate a multifaceted, compressible excipient for usage in the pharmaceutical industry (5). In this research work, entecavir monohydrate was used as a drug candidate to develop fast-release tablets using xylitol and mannitol through a novel melt-granulation technique. The fast-release tablets aimed to avoid fluctuations in plasma drug concentration and increase the bioavailability of entecavir monohydrate.

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(RESEARCH ARTICLE)

Check for updates

Novel colorimetric approach for amikacin estimation in pure powder and its pharmaceutical formulations

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Abstract

A sensitive and validated colorimetric method was developed and optimized for the estimation of amikacin sulfate in pure and pharmaceutical dosage forms. Ascorbic acid was used as a chromogenic reagent to produce a stable color complex with amikacin that absorbs strongly at 390nm and 540nm. Several experimental factors were evaluated to maximize color development and stability, including solvent, reagent concentration, reaction time, and temperature. Optimal conditions were found using DMSO solvent, 0.2% ascorbic acid, and 40 minutes reaction time at 25°C. Under these conditions, Beer's law was obeyed in the range of 40-200µg/mL with high correlation coefficients, indicating excellent linearity. The method was validated in terms of linearity, accuracy, precision, detection/quantitation limits, and application to actual samples as per ICH guidelines. Recovery studies showed nearly 101% accuracy. Low relative standard deviations reflected high precision. Limits of detection/quantitation were 19-57µg/mL, enabling reliable analysis even at low concentrations. The method quantified amikacin content in injections, giving 98-102% accuracy. Statistical comparisons to a validated method gave no significant differences, confirming this approach provides equivalent results.

Keywords: Amikacin sulfate; Colorimetric method; Ascorbic acid reagent; Validation

1. Introduction

Pharmaceutical analysis aims to develop precise and economical techniques for quantifying drug substances and ensuring product quality, safety and efficacy [1], [2]. Colorimetric assays have gained significant importance in pharmaceutical analysis due to their simplicity, low cost and minimal instrumentation requirements [3]. Colorimetry does not rely on expensive and complex instruments like High Performance Liquid Chromatography (HPLC), Gas Chromatography (GC) or Mass Spectroscopy (MS). It simply requires a UV-visible spectrophotometer/a simple colorimeter which is commonly available in quality control labs [4].

Amikacin is a crucial antibiotic, hence developing a simple colorimetric method for its analysis becomes imperative [5], [6]. The present study proposes a validated colorimetric technique for the quantitative determination of amikacin in bulk and pharmaceutical formulations. The proposed colorimetric approach seeks to provide an economical, rapid and reproducible method for routine analysis of amikacin with acceptable accuracy and precision.

While analytical skills continue to scale new heights of sophistication, the need for basic yet effective techniques has also persisted. Colorimetry has revived the interest in such techniques due to benefits of affordability, ease of use and adequate effectiveness for routine quality testing [7]. The current work aims to develop a colorimetric method for

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A COMPREHENSIVE REVIEW ON DRUG REGULATORY GUIDELINES IN MIDDLE EAST AND THE NORTH AFRICAN COUNTRIES

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ABSTRACT

The Middle East and North Africa (MENA) region presents a mix of opportunities and obstacles for drug companies seeking to register their products. Despite economic growth and a large population, navigating regulatory requirements and political complexities proves challenging but critical for accessing this important market. This analysis aims to evaluate registration procedures for pharmaceuticals in MENA countries, understand their constraints and potential, and provide insights for companies. While the drug market shows diversity, sustainability, and expansion driven by population size, oil wealth, higher incomes, education, a larger middle class, and disease burden, regulations and uncertainties curb progress. Regulatory bodies administer separate healthcare systems, but written laws are limited, mostly in local languages, open to interpretation, and hindered by lack of transparency or instability in some countries. Demand for advanced drugs and medical goods will likely increase, but navigating complex regulations and requirements presents difficulties. Each country issues guidelines for health authorities and export/import medication. Requirements encompass export applications, checklists, renewal registrations, lab standards, supplement registrations, application receipts, and appointment sheets. Public health services are managed differently, requiring country-specific knowledge. Opportunities abound for addressing health needs, but political and economic realities significantly impact regulations and companies' ability to access this market. Improving standards are dampened by ongoing

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Case Report of Hemoperitoneum from Discal Hemorrhage

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Abstract**—** *We report a case of hemoperitoneum arising from a ruptured lumbar intervertebral disc in a 30-year-old male patient with a history of epilepsy, chronic alcohol use, and smoking. Though treated surgically, the patient's neurological deficits did not recover fully due to the prolonged compressive effect of blood clots in the peritoneal cavity. This case highlights the dangers of risk factors, non-adherence, and diagnostic delays in complex spinal patients. Close monitoring, multidisciplinary management, and health-promoting lifestyle changes are essential to optimizing outcomes and minimizing catastrophic complications. Strict compliance with medical advice and immediate reporting of concerning symptoms can save lives by enabling prompt diagnosis and emergency care. Though spinal injuries themselves result in a high burden of disability and poor quality of life, avoidable factors substantially worsen prognosis and recovery. We aim to emphasize through this report the critical importance of mitigating threats to management and optimizing the limited benefits of treatment. Teamwork across specialties is required, from physicians and surgeons to rehabilitation specialists, patients, and families. Alcohol/tobacco cessation and long term compliance with medication/follow-up plans are mandatory even after the acute threat has passed. This case sparks increased awareness of the life-and-death consequences of non-adherence, risk taking, and diagnostic delays in the complex patients who compromise a crucial yet vulnerable segment of the population. With diligence, catastrophic complications can be prevented, but close monitoring remains crucial life-long.*

Keywords**—** *Hemorrhage; Lumbar vertebrae; Outcome and process assessment; Risk factors; Spinal cord injuries.*

I. INTRODUCTION

Hemorrhage from ruptured intervertebral discs is an uncommon but dangerous complication that can quickly become life-threatening if not diagnosed and addressed promptly[1]. We report a case of hemoperitoneum arising from a ruptured lumbar disc in a 30-year-old male patient with a history of epilepsy, chronic alcohol use, and smoking.

Though treated surgically, the patient's neurological deficits did not recover fully due to the prolonged compressive effect of blood clots in the peritoneal cavity[2]. This case highlights the importance of caution, compliance, close monitoring, and early intervention in at-risk patients with spinal pathologies. Risk factor modification is essential but must be followed consistently to optimize outcomes and minimize catastrophic complications.

Spinal injuries already confer a high risk of disability, pain, and poor quality of life. Avoidable aggravating factors like alcohol/tobacco use and non-adherence to medical advice pose additional threats to the management and recovery of such patients[3]. We aim to emphasize the need for health-promoting lifestyle changes and vigilant follow-up in these complex cases through this report. Strict adherence to treatment plans and timely reporting of any concerning symptoms can save lives by enabling immediate diagnosis and emergency care[4].

It is our hope that this case sparks increased awareness around the dangers of risk factors, non-compliance, and delayed treatment in patients with spinal pathologies. Close teamwork of physicians, surgeons, rehabilitation specialists, patients, and families are required to achieve the best possible outcomes and prevent life-threatening complications.

II. CASE PRESENTATION

A 30-year-old male presented to the hospital with a history of epilepsy, alcoholism, and smoking. He presented with abdominal pain and inability to move his left leg after a fall and injury 3 days prior. On examination, there was tenderness over the left knee joint and lower abdomen. Magnetic Resonance Imaging (MRI) revealed a ruptured disc in the lumbar spine causing hemoperitoneum from intra-abdominal bleeding.

The patient has been treated for epilepsy with phenytoin for 3 years. However, he continues to drink alcohol daily and smoke half a pack of cigarettes per day despite medical advice. After a fall from standing height, he developed pain over the left knee and abdomen which gradually worsened. He went to a local clinic where an X-ray was taken, showing no fractures. He was prescribed pain medications and discharged.

The abdominal pain and leg weakness prompted him to come to our hospital. An MRI revealed a ruptured L4-L5 disc with extravasation of disc material into the peritoneal cavity, resulting in hemoperitoneum. An emergency laparotomy was performed, evacuating 2 liters of blood clots from the peritoneal cavity. The ruptured disc fragment was cleared, and the abdominal cavity was thoroughly washed. Though the bleeding was controlled, his neurological deficit did not recover due to long-standing compression on the nerves.

This case highlights the need for avoidance of high-risk behaviors in patients with spinal injuries or surgeries. Prompt diagnosis and surgical intervention could have prevented life-threatening complications like hemoperitoneum. Patients with

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