Original Article

Assessment of lung involvement using HR among vaccinated and non-vaccinated elderly COVID-19 patients admitted in a designated hospital, Tamil Nadu – A retrospective study

Rajaraman Nivetha[1], Neethiselvan Rajarajeswari[1], Balaji Arumugam[2], Chinnaian Sivagurunathan[1], Ramesh Harihara Iyer[1]

[1]Department of Community Medicine, Tagore Medical College and Hospital, Chennai, Tamil Nadu, India, [2]Department of Community Medicine, Arunai Medical College and Hospital, Tiruvannamalai, Tamil Nadu, India

Abstract

Introduction: The COVID-19 pandemic is considered one of the most devastating situations globally, the worst affected were the senior citizens. A number of initiatives were carried out to control the COVID-19 pandemic; one such important measure is the development of COVID-19 vaccines to prevent the disease. But the continuous emergence of new SARS-COV2 variants (antigenic drift) and its demographic variation in virulence makes the vaccine's efficacy questionable. This study is intended to evaluate the association between the degree of lung involvement and the effectiveness of vaccination against the disease in cases admitted to a designated hospital in Tamil Nadu. **Materials and Methods:** A hospital records-based-retrospective research was conducted among COVID-19 patients admitted from the 1st of April 2021 to the 31st of May 2021, and information was gathered regarding their vaccination status, comorbid conditions, and CT severity score (CTSS) in the HRCT lung report. A consecutive sampling technique was used to choose the study participants; about 120 participants were included in the study. The Chi-square test and Fisher's extract test were used to evaluate the hypothesis. The relationship between a dependent variable and independent factors was estimated using multiple linear regression. **Results:** Among 120 participants, about 60.2% were males and 39.8% were females. Vaccination status and comorbid conditions had a significant association with severe lung involvement in COVID-19 patients. **Conclusion:** Non-vaccinated patients had severe lung involvement based on the HRCT lung scan findings than the vaccinated patients. To reduce mortality, it is essential to ensure universal coverage of COVID-19 vaccination.

Keywords: COVID-19 vaccine, CT severity score, geriatric

Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Worldwide, in early December 2019, an outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) occurred in Wuhan City, Hubei province, China.[1] On 30th January 2020, the World Health Organization (WHO) declared the outbreak as a Public Health Emergency of International concern.[2] In India, the first COVID-19 case was reported in Kerala state on 30th January 2020, and in Tamil Nadu state the first case was reported on 7th March 2020.[3] The infection spreads across the country

Address for correspondence: Dr. Chinnaian Sivagurunathan, Department of Community Medicine, Tagore Medical College and Hospital, Rathinamangalam, Chennai - 600 127, Tamil Nadu, India.
E-mail: drsivaguru85@gmail.com

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Effect of chlorpyrifos and its metabolites on skeletal system development of chick embryo

Swathi Priyadarshini Chandra Sekaran [1], Balaji Thotakura [2], Ashok Kumar Jyothi [3], Subramanian Manickam [2], Jayaprakash Chanemougavally [4], Kaliaperumal Prabhu [5], Dhandapani Hari Gopalan [1]

Affiliations

Affiliations

1 Department of Anatomy, Tagore Medical College and Hospital, Chennai, Tamil Nadu, India.
2 Department of Anatomy, Chettinad Hospital and Research Institute, Chettinad Academy of Research and Education, Chennai, Tamil Nadu, India.
3 Apollo Institute of Medical Sciences & Research, Chittoor, Andhrapradesh, India.
4 Department of Anatomy, A.C.S Medical College and Hospital, Dr. MGR Educational and Research Institute Velappanchavadi, Chennai, Tamil Nadu, India.
5 Department of Anatomy, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India.

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Abstract

Research focus: Chlorpyrifos is an organophosphate insecticide used primarily to control pests on a variety of food and feed crops. Humans are directly or indirectly exposed to this pesticide through food, air, and occupation. The ill effects of chlorpyrifos on various organ systems of human has been widely documented, but less is known about its influence on human bones.

Aim: To analyze the effect of chlorpyrifos and its metabolites 3,5,6-trichloro-2-pyridinol (TCPy) on the skeletal system of the chick embryo.

Materials and methods: Fertilized chick eggs were exposed to different concentrations of chlorpyrifos and its metabolite 3,5,6-TCPy on 1.5 days of incubation. The proximal phalanx of 18-day-old embryos was analyzed for defects in growth and ossification through histopathology, immunohistochemistry, angiogenesis assay, and gene expression study.

Results: Dose-dependent variations in developing bone of chick embryo were observed. Histochemical and histomorphometry studies of proximal phalanx showed increased in the growth plate length ($F(9, 59) = 228.9509$, $p = .00001$) with a reduction in the total length of the phalanx ($F(9, 59) = 109.9905$, $p = .00001$), decreased mineralization ($F(9, 59) = 224.6872$, $p = .00001$), decreased blood islands in the bone marrow ($F(9, 59) = 7.7083$, $p = .0001$) of chlorpyrifos, and 3,5,6-TCPy-exposed group. Significant downregulations in the expression patterns of the transcription factors, such as SOX9, RUNX2, and ALP, were also observed.

Conclusion: Chlorpyrifos and its metabolite 3,5,6-TCPy exposure alters the chondrogenesis in the growth plate cartilage of long bone in chick embryo. The pesticide and its metabolite also interfere in ossification.

Keywords: 3,5,6-trichloro-2-pyridinol; bone; chick embryo; chlorpyrifos; histopathology.

DEAN
TAGORE MEDICAL COLLEGE & HOSPITAL
RATHINAMANGALAM, MELAKOTTAIYUR POST,
Chennai-600 127.

Related information

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Pharmacophoric Evaluation of Compounds Isolated from GC-MS Analytical Method of Aqueous Extract of *Azadirachta indica* Leaves

Simhadri V.S.D.N.A. Nagesh[1]*, I. Kannan [2] and K.K. Bairagi [3]

[1]Department of Pharmacology, Shri Ram Murti Smarak Institute of Medical Sciences, Bareilly, India.
[2]Department of Microbiology, Tagore Medical College and Hospital, Chennai, India.
[3]Department of Forensic Medicine, Shri Ram Murti Smarak Institute of Medical Sciences, Bareilly, India.
*Corresponding Author E-mail: nageshsai117@gmail.com

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The majority of current pharmaceuticals are derived from traditional plants; one of these, Azadirachta indica, also known as neem, has a variety of therapeutic applications ranging from simple infections to cancer. All of these pharmacological effects are due to the secondary metabolites present in the various plant parts. Diverse researchers made numerous attempts to identify the active ingredients using techniques such as Gas Chromatography-Mass Spectrometry (GC-MS), High-performance liquid chromatography (HPLC), and High performance thin-layer chromatography (HPTLC), among others. The GC-MS technique is used to isolate various secondary metabolites from the leaves of an aqueous extract of A.indica. The isolated compounds were analysed for their pharmacokinetics and pharmacodynamics properties using software such as SWISSADME, OPENBABEL, Swiss target prediction, etc. The aqueous extract of A.indica yielded 13 compounds, but only 5 compounds showed the highest number of hits; those with the highest concentration were chosen to obtain the pharmacodynamic, pharmacokinetic, and toxicological profiles. All five compounds are non-toxic and can be administered orally, and molecules with specific properties are capable of modulating a variety of proteins, including some enzymes. Based on this information, we can assume that these molecules can be used as "hit" or "lead" molecules in preclinical studies.

Keywords: Azadirachta indica; GC-MS; Pharmacokinetics; Pharmacodynamic; Secondary Metabolites; SWISSADME; Swiss target prediction.

Since ancient times, the use of medicinal plants to treat both common and uncommon ailments has been documented. *Azadirachta indica*, commonly known as Neem, is a plant that has been used traditionally to treat a variety of human diseases. It is a member of the Meliaceae family and is native to Burma and the Indian subcontinent. *Melia azadirachta* Linn is an alternative name for this plant. Indian lilac (English), neeb (Arabic), Azadirakhta (Persian), Margosa, Dogon yaro (certain Nigerian languages), Pokoksemambu (Malaysia), Kohomba (Sinhala), Tamar (Burmese), Nimba (Sanskrit), Vepa (Telugu), and neem are all names for the neem tree (Hindi and Bangla). It is known as Mwarobaini (Swahili) in east Africa, which literally translates to "tree of the 40" due

Effect of quarry dust on hematological variations among stone quarry workers

Bama Rajanayagam*[1], Dr.S.Manikandan*[2] Dr.N.N.Anand[3], Dr. Saravanan Sekaran[4], Dr. Abirami Arthanari[5]

[1]Research Scholar, Bharath Institute of Higher Education and Research, Selaiyur, Chennai. Asst. Professor, Dept. of Physiology, Indira Medical College and Hospital, Thiruvallur.

[2]Professor, Dept. of Physiology, Tagore Medical College and Hospital, Rathinamangalam, Chennai.

[3]Professor and Head, Dept. of General Medicine, Sree Balaji Medical College and Hospital, Chromepet, Chennai.

[4]Asst. Professor, Dept. of Prosthodontics, Saveetha Dental College and Hospital, Saveetha Institute of Medical and Technical Sciences, Chennai.

[5]Lecturer, Dept. of Forensic Odontology, Saveetha Dental College and Hospital, Saveetha Institute of Medical and Technical Sciences, Chennai.

***Corresponding Author: Dr.S.Manikandan**
Email: pdcbama@gmail.com

Abstract:
Stone quarries are an unregulated sector that generate harmful substances into the environment. Exposure to these inhalable substances poses to have a deleterious impact on the health of the workers. India has the highest occupation related mortality in the world. The present study is a step towards finding out the association of stone quarrying and its harmful effect on the hematological parameters, to ascertain the changes due to dust inhalation. This study was performed on exposed group consisting of 75 individuals who belonged to different exposure levels to quarry dust (<5years, 5-10 years and >10 years) and the control group consisted of 45 selected individuals without any firsthand exposure. Significant difference was observed between the hematological profile of the groups by unpaired 't' test and univariate analysis using SPSS version 21.0. The results showed that the values of white blood cell (WBC), lymphocytes (LYM), monocytes (MID), mean corpuscular hemoglobin (MCH), and platelets (PLT) were significantly increased in exposed workers ($p \leq 0.05$*) whereas red blood cell (RBC) hematocrit (HCT), and Hemoglobin (Hb%) were significantly lower ($p \leq 0.00$**). This study emphasizes the importance of regular assessment of the environmental pollution, periodic health screening and necessitates the usage of personal protective equipment to protect them from occupational hazard.

Keywords: Quarry dust, occupational exposure, health impact, hematological parameters

Introduction

Occupation or a job is an activity that one engages in the society for their existence or luxury that provides a social status in the community, based on the educational qualification or skills. in spite of the benefits, every occupation holds certain risks either caused accidently or a disease caused on exposure to certain hazardous substances. Hence, Occupational hazard is a major threat to the wellbeing of every worker. Stone quarry workers are not an exception to such hazards faced during work. Stone quarry is a inevitable sector that provides raw materials for construction [1].

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Comparison Between Maternal Blood Glucose and Fetal Cord Insulin Level Among Gestational Diabetes Mellitus Women

C.S. Brethis[1], R. Hemalathaa[2]*, Ramyaa Rajendiran[3], Sumitha A[1], Navneeth P[1] and Amalnath A[1]

[1]Department of Pharmacology, ACS Medical College and Hospital, Chennai, India.
[2]Department of Biochemistry, Saveetha Medical College, Chennai, India.
[3]Department of Pediatrics, Tagore Medical College and Hospital, Chennai, India.
*Corresponding Author E-mail: hemalathaaramar@gmail.com

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Offspring of gestational diabetes mellitus (GDM) mothers are at high risk of developing insulin resistance, type 2 diabetes mellitus (T2 DM), and cardiovascular complications later in life. So, screening maternal blood glucose during pregnancy and identifying high-risk infants immediately after birth is necessary to prevent the potential long-term implications. To correlate the maternal fasting and post-prandial blood glucose withfetal insulin level. A case-control study, was conducted at Chettinad Hospital and Research Institute, India, between May 2019 to May 2020. A 75-gram OGTT was performed among pregnant women between 24 to 28 weeks of pregnancy for diagnosing GDM according to American Diabetes Association (ADA) guidelines. 94 GDM mothers and Non-GDM mothers and theirnew-bornswere taken up for this study. 2.5ml of maternal venous blood was collected in a vacutainer containing sodium fluoride and EDTA as an anticoagulant for FBS and PPBS estimation. Some mothers on induction of labor were posted for emergency LSCS (for failed induction and non - progression of labor) and some had normal vaginal deliveries. Plasma FBS and PPBS estimation in the mother's blood sample was assayed by the Hexokinase method in Siemen'sDimension RxLMachine immediately after centrifugation. 2.5ml of umbilical cord blood was collected in a vacutainer without an anticoagulant after the 2nd stage of labor. 0.5 ml of cord blood serum was separated and stored at -80°C in an eppendorf for later estimation of insulin by CLIA method in Beckman Coulter – Access 2 Immunoassay System. Independent students' t-tests and Pearson's correlation were used as statistical methods. p-value <0.05 is considered significant. There is a positive correlation and significant difference between maternal FBS, PPBS, and fetal insulin levels in the GDM group (p-value 0.008, r-value 0.272 and p-value 0.005, r-value 0.286) compared to the Non-GDM group (p-value -0.087, r-value 0.243 and p-value 0.018, r-value 0.212). Significant hyperinsulinemia was noted in the offspring of the GDM group compared to the NON-GDM group.Those hyper-insulinemic babies are at very high risk of developing obesity, metabolic syndrome, and type 2 DM in the future and possess a threat to society.

Keywords: APGAR score; Fetal cord insulin; FBS; Gestational Diabetes mellitus; PPBS; Placenta weight.

The physiological alterations that happen during pregnancy act as a "stress test" naturally and this pregnancy period is considered a 'window period' for future maternal health. Most of the women seeking medical care during pregnancy utilize this opportunity for preventive healthcare guidance [1]. There is growing evidence in recent years that the maternal nutritional status and

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Case Report

Leukoaraiosis and Dizziness: Are They Related? – A Case Series

Karthikeyan, D. Anand; Kumar, Poornima

Author Information

Department of Otorhinolaryngology, Tagore Medical College and Hospital, Rattinamangalam, Tamil Nadu, India

Address for correspondence: Dr. D. Anand Karthikeyan, B3-307, Shriram Shankari Apartments, Thangappapuram, Perumattunallur, Guduvanchery - 603 202, Tamil Nadu, India. E-mail: anandkarthikeyan99@gmail.com

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- Open

Metrics

Abstract

Dizziness and imbalance are one of the most common complaints seen in elderly people. Age-related ischemic diseases have varying degrees of manifestations and imbalance problems. Cerebral small vessel white matter disease has recently been a topic of interest in view of its association with geriatric syndromes–development of cognitive decline, dementia, falls, etc., but the association between small vessel disease and dizziness has not established clearly yet. Magnetic resonance imaging (MRI) brain is the most commonly used imaging modality for neurological disorders. White matter hyperintensities (WMHs) on T2-weighted sequences on MRI are known as leukoaraiosis (LA) and are suggestive of small vessel white matter disease and represent a high risk of cerebral, cerebellar, and brainstem stroke. The purpose of the present study is to investigate the correlation between unexplained vertigo and radiological changes of LA (small vessel disease) and videonystagmography (VNG) findings of such patients. First patient, a 55-year-old male patient had complaints of short-lasting episodes of spinning sensation and imbalance for the past 2 years. MRI brain showed small vessel ischemic changes (leukoaraiosis) with right vascular loop type 3 (anterior inferior cerebellar artery) without compressive symptoms. VNG showed broken smooth pursuit in horizontal and vertical planes; a hypometric saccades tracing in both planes and microsaccadic oscillations in spontaneous gaze. Second patient, a 60-year-old male had recurrent episodes of vertigo for the past 15 years. His VNG showed micro-oscillations in the saccades and impaired smooth pursuit. MRI revealed bilateral symmetrical T2 FLAIR hyperintensities in white matter and lateral ventricles. Third patient, a 69-year-old female presented with giddiness, nausea, and vomiting for 5 days. Pure-tone audiogram showed mild sensorineural hearing loss. MRI brain showed diffuse cerebral atrophy with small vessel ischemic changes. VNG showed impaired smooth pursuit and microsaccadic oscillations when the gaze was fixed. All three patients were managed successfully by vestibular rehabilitation and antioxidants and Coenzyme Q10. Through this study, we would like to highlight the possibility of a relation between leukoaraiosis and unexplained dizziness among elderly patients.

INTRODUCTION

Dizziness and imbalance are one of the most common complaints seen in elderly people.[1,2] Vertigo is the sensation of self-motion when no self-motion is occurring or the sensation of distorted self-motion during an otherwise normal head movement. The term encompasses false spinning, swaying, tilting, bobbing, bouncing, or sliding sensations.[3] Dizziness is a sensation of disturbed or impaired spatial orientation without a false or distorted sense of motion. Mostly dizziness can be

SKIN

ORIGINAL RESEARCH

A Randomized Controlled Study of Topical Benzoyl Peroxide with Oral Doxycycline Versus Topical Benzoyl Peroxide with Oral Lymecycline in Acne Vulgaris

Rekha Gurunatham Ponnurangam, MD(DVL)[1], Sindhuja Ramasamy MD(DVL)[2], Sridhar Venu MD(DVL)[2], Jayakalyani Vijayananth MD(DVL)[2]

[1] Department of DermatoVenereoLeprology, Tagore Medical College Hospital, Tamilnadu, India
[2] Department of DermatoVenereoLeprology, Chengalpattu Medical College Hospital, Tamilnadu, India

ABSTRACT

Background: Acne vulgaris is a chronic inflammatory disease of the pilosebaceous unit, which has a variable course with acute or insidious onset, relapses, and recurrences. It is one of the most common diseases of patients attending the dermatology clinic. Tetracyclines are the most common oral antibiotic prescribed for acne vulgaris.
Aims: Our study aims to compare the efficacy of topical 2.5% benzoyl peroxide gel (BPO) with oral doxycycline versus topical 2.5% benzoyl peroxide gel with oral lymecycline in the treatment of acne vulgaris.
Methods: The study included 100 patients with acne vulgaris divided into two groups of 50 each. Group A was treated with topical 2.5% benzoyl peroxide gel once daily application at night and capsule doxycycline 100mg twice a day and Group B was treated with topical 2.5% benzoyl peroxide gel once daily application at night and capsule lymecycline 408 mg once a day for 12 weeks. The primary assessment was done using Indian Association of Acne (IAA) grading at baseline and then every fortnight for 12 weeks. Patients were followed up for another 12 weeks after completion of the study.
Results: The grade wise distribution of acne based on IAA grading between the two groups was compared. Chi square test and p-value for all 3 grades of acne at baseline, 2 weeks, 4 weeks, 6 weeks, 8 weeks, 10 weeks, and 12 weeks showed statistical improvement among patients in group B at 2, 8 and 10 weeks with p-values of 0.01,0.01 and 0.007, respectively.
Conclusions: From our study it is evident that lymecycline is superior to doxycycline, with much statistical significance among moderate to severe acne.

INTRODUCTION

Acne is a very common and unique disease of human beings.[1] Acne involves the inflammation of the pilosebaceous unit with varied manifestations including comedones, pustules, papules, cysts, nodules, and scarring. [2]

Tetracyclines are the most common oral antibiotic prescribed for acne vulgaris in patients above 12 years. They are classified as first generation (tetracycline, chlortetracycline, oxytetracycline, and demeclocycline), second generation (doxycycline, lymecycline, meclocycline, methacycline, minocycline, and rolitetracycline) third generation (tigecycline),

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RESEARCH ARTICLE
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EFFECT OF ACORUS CALAMUS LINN ON ASTROCYTES IN THE SUBGRANULAR ZONE OF THE DENTATE GYRUS IN THE HIPPOCAMPAL REGION IS NEUROPROTECTIVE.

Dr.Subamalani S[1], Dr.Sasikumar Arumugam[2*], Dr.Balaji Arumugam[3], Dr. Jamunarani Srirangaramasamy[4]

[1]Associate Professor, Department of Physiology, Tagore Medical College and Hospital, Chennai, India.600127.
[2*]Associate Professor, Department of Physiology, Arunai Medical College and Hospital, Tiruvannamalai, Tamilnadu, India.606603.
[3]Professor & Head, Department of Community Medicine, Arunai Medical College and Hospital, Tiruvannamalai, Tamilnadu, India.606603.
[4]Professor & Head, Department of Pathology, Bhaarath Medical College Hospital, BIHER, Selaiyur, Chennai 600073

***Corresponding Author**: Dr.Sasikumar Arumugam
*Associate Professor, Department of Physiology, Arunai Medical College and Hospital, Tiruvannamalai, Tamilnadu, India.606603. simmamsasi@gmail.com

Abstract

Our objective was to examine and uncover the neuroprotective properties of the plant Acorus calamus linn, also referred to as Vacha. Any form of stress is a major contributing factor to a number of ailments. In the future, a medication molecule with the ability to minimize cellular damage, boost antioxidant levels, and combat stress will be required. Thus, a total of 24 male Wistar albino rats—that is, 6 groups of animals—were used in the current investigation. Dimethyl sulphoxide (1 mL/kg/p.o./day) was given as a control. Stress: administered 1 mL/kg/p.o./day of dimethyl sulphoxide and underwent 6 hours of restraint per day. EE-ACL: Mammals ACL ethanolic extract (100 mg/kg/p.o./day) was received. Alpha-asarone (9 mg/kg/p.o/day) was administered 30 minutes prior to undergoing 21 days of restraint stress. Sigma Plot 13.0 was utilized for data analysis. According to the findings, rats given an ethanolic extract of Acorus calemus Linn and active principle alpha-asarone prior to stress demonstrated noticeably better spontaneous alteration behavior in the Y maze test. Additionally, the drug-treated groups' corticosterone levels were lower than those of the stress group. The amount of neurons in the dentate gyrus region of the hippocampal regions in drug-treated groups remained comparable to those in the control group, as indicated by toludine blue staining. In the drug-treated groups, glial fibrillic acidic protein immunoreactivity revealed newly proliferating astrocytes that looked like stars. The fibers were thin and had a regular course. The findings imply that the central nervous system is produced by phytochemicals, specifically those found in polyphenolic compounds, glycosides, flavonoids, alkaloids, and triterpenoids, have a relaxing effect . The rhizome of Acorus calamus linn, which is rich in these phytochemicals, effectively reversed changes brought on by stress by reducing neuroinflammation and enhancing cognitive function.

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Original Article

Assessment of Knowledge, Attitude, and Practices of Personal Protective Equipment among Health Care Providers in Tamil Nadu, South India

Lavanya D[1], Sony P[2], Kannan I[2], Thenmozhivalli PR[2]

[1]Under graduate MBBS student, Tagore Medical College & Hospital, Chennai
[2]Department of Microbiology, Tagore Medical College and Hospital, Chennai

ABSTRACT

Introduction: Personal protective equipment provides considerable protection from hospital-acquired infections. Ample knowledge with a positive attitude and best practices of personal protective equipment by healthcare workers is indispensable to get protection themselves and to serve humanity. The study aimed to assess the knowledge, attitude, and practice (KAP) regarding personal protective equipment (PPE) among healthcare workers along with possible determinant factors.

Methods: An observational cross-sectional study was conducted from August - September 2022 among 386 healthcare workers in Tamil Nadu, South India. The structured self-administered questionnaire was used for data collection. The study comprised questions evaluating a socio-demographic profile, knowledge, attitude, and practice of personal protective equipment. Descriptive statistics (percentage, frequency, mean) and inferential statistics (Chi-square test) were used for the data analysis.

Results: The overall knowledge of the participants was satisfactory (73.3%). Physicians had a good knowledge level against non-physicians ($p<0.05$). It was observed that the 30 and more years of experience group has less knowledge ($p<0.05$). A positive attitude toward PPE was noted in 58.3% of the participants. Statistical significance in the attitude of participants with education, occupation, and experience was not observed ($p>0.05$). Good practice of PPE was followed by 66.8% of participants. Nurses (91.7%) showed good practice of PPE than physicians and laboratory technicians and was found to be statistically significant ($p<0.05$).

Conclusion: The findings demonstrated that most healthcare workers had an overall good knowledge, positive attitude, and good practice regarding PPE however they need periodical training and auditing.

Keywords: Attitude, health care workers, knowledge, personal protective equipment, practice.

Corresponding author:
Sony Paul
Associate Professor
Department of Microbiology
Tagore Medical College & Hospital, Chennai,
India
Tel.: +91 9094884644,
E-mail:
sonymarypaul@gmail.com
ORCID ID: https://orcid.org/0000-0001-9369-1733

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Torsion of Epididymal Cyst: A Case Report With Review of Literature

Gurubharath Ilangovan [1], Manimaran M [2], Vogu Mounika [3], Moien AB Khan [4, 5]

1. Radiology, Tagore Medical College and Hospital, Chennai, IND 2. Radiodiagnosis, Tagore Medical College and Hospital, Chennai, IND 3. Radiodiagnosis, Tagore Medical College and Hospital, chennai, IND 4. Family Medicine, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, ARE 5. Primary Care, North West London - National Health Service Provider, London, GBR

Corresponding author: Moien AB Khan, moien.khan@uaeu.ac.ae

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Abstract

Torsion of an epididymal cyst is one of the rare and least-known causes of acute scrotal pain. Epididymal cysts, when large, can undergo occasional complications like infection or, rarely they might undergo torsion, needing emergency surgery.

We present a case of a 37-year-old gentleman with acute scrotal pain to the scrotum. Testicular torsion was suspected clinically, but sonography revealed a normal-appearing testis and a large left-sided epididymal cyst with internal echoes and dependent debris. A diagnosis of epididymal cyst torsion was suspected based on sonographic findings. Exploratory surgery showed a reddish, inflamed epididymal cyst that had undergone torsion on its pedicle. The cyst was excised leading to symptomatic relief to the patient. Due to the rarity of this condition, such cases are often misdiagnosed clinically as testicular torsion. Ultrasonography helps in aiding the correct diagnosis and the radiologist needs to be familiar with the radiological aspects of diagnosing torsion of epididymal cysts.

Categories: Radiology, Urology, General Surgery
Keywords: india , doppler, acute scrotal pain, ultrasound, cyst, epididymal, torsion

Introduction

Epididymal cysts (EC) are generally benign lesions, with their prevalence varying considerably between children and adults [1]. In the pediatric population, they constitute a relatively rare finding, accounting for approximately 5% to 20% of cases in the available literature, in contrast to their higher incidence among adults [2]. The precise etiology of these cysts is still debated although they have been postulated to stem from congenital anomalies linked to hormonal fluctuations during embryonic development [3]. Typically, ECs are managed conservatively, with spontaneous regression observed in most instances.

However, while epididymal cysts are predominantly asymptomatic, they can undergo torsion upon themselves, culminating in acute testicular pain. While occurrences of such cases are rare, they emphasize the significance of being watchful and conducting a thorough differential diagnosis. This is especially relevant in situations involving children, as the infrequency of EC torsion requires a heightened level of suspicion [4,5]. This case report presents an unusual incidence of acute scrotal pain in a 37-year-old male due to torsion of an epididymal cyst, highlighting the diagnostic challenges and the importance of accurate and timely intervention.

Case Presentation

A 37-year-old gentleman with acute onset of severe scrotal pain was referred to the radiology department with clinical suspicion of testicular torsion. He presented to the emergency department with severe, unremitting pain in the left hemiscrotum which was only mildly relieved by analgesics. He had a history of left-sided scrotal swelling for the past two years for which he had not undergone any investigation. He had no relevant medical, family, or any prior surgical history, and was not on any regular medications. Physical examination revealed a cystic swelling in the left hemiscrotum which was exquisitely tender. The left testis could not be felt separately from the swelling. The patient was afebrile. A working diagnosis of possible left testicular torsion was made, and the patient was referred for an ultrasound examination.

Sonography revealed a left-sided epididymal fluid-filled cyst of size 5 x 4 x 5 cm arising from the head of the left epididymis (Figure *1*), with the left testis revealing no abnormality. The epididymal cyst showed fine free-floating echoes within and a few thin septations (Figure *2*). There was no internal vascularity within the cyst. Even though torsion of the cyst was suspected, and a twisted pedicle of the cyst was looked for, clear evidence of a pedicle could not be demonstrated.

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TAGORE MEDICAL COLLEGE & HOSPITAL
RATHINAMANGALAM, MELAKOTTAIYUR POST,
Chennai-600 127.

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CLINICAL AND EXPERIMENTAL VACCINE RESEARCH

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Effectiveness of BBV152 vaccine and ChAdOx1-S vaccine in preventing severe disease among vaccinated patients admitted to a designated COVID-19 hospital in India

Rajaraman Nivetha[1], Ramesh Anshul[2], Subbarayan Sarojini[3], Chinnaian Sivagurunathan[1], Chandrasekar Janaganbose Maikandaan[4]

[1]Department of Community Medicine, Tagore Medical College and Hospital, Chennai; [2]Department of Psychiatry, Sri Muthukumaran Medical College Hospital and Research Institute, Chennai; [3]Department of Paediatrics, Sri Muthukumaran Medical College Hospital and Research Institute, Chennai; [4]Department of Psychiatry, Melmaruvathur Adhiparasakthi Institute of Medical Sciences & Research, Melmaruvathur, India

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Corresponding author:
Chinnaian Sivagurunathan, MD
Department of Community Medicine, Tagore Medical College and Hospital, Chennai, Tamil Nadu, India
Tel: +91-9790474787
E-mail: drsivaguru85@gmail.com

No potential conflict of interest relevant to this article was reported. This retrospective study was conducted solely for academic purposes, with no influence or involvement from the government of India or the manufacturers of COVISHIELD/COVAXIN vaccines.

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Purpose: Coronavirus disease 2019 (COVID-19) is a highly formidable disease. Globally, multiple vaccines have been developed to prevent and manage this disease. However, the periodic mutations of severe acute respiratory syndrome coronavirus 2 variants cast doubt on the effectiveness of commonly used vaccines in mitigating severe disease in the Indian population. This study aimed to assess the effectiveness of the BBV152 vaccine and ChAdOx1-S vaccine in preventing severe forms of the disease.

Materials and Methods: This retrospective study, based on hospital records, was conducted on 204 vaccinated COVID-19 patients using a consecutive sampling approach. Data on their vaccination status, comorbidities, and high-resolution computed tomography lung reports' computed tomography severity scores were extracted from their medical records. Fisher's exact test and binomial logistic regression analysis were employed to assess the independent associations of various factors with the dependent variables.

Results: Of the 204 records, 57.9% represented males, with a mean age of 61.5±9.8 years. Both vaccines demonstrated effective protection against severe illness (90.2%), with BBV152 offering slightly better protection compared to ChAdOx1-S. Male gender, partial vaccination, comorbid conditions, and the type of vaccine were identified as independent predictors of severe lung involvement.

Conclusion: This study indicates that both vaccines were highly effective (90%) in preventing severe forms of the disease in fully vaccinated individuals. When comparing the two vaccines, BBV152 was slightly more effective than ChAdOx1-S in preventing severe COVID-19.

Keywords: COVID-19 vaccine, Vaccination, SARS-CoV-2, CT severity score, Aged

Introduction

Coronavirus disease 2019 (COVID-19) is one of the most devastating infectious diseases in recent history. The World Health Organization (WHO) officially declared COVID-19 a pandemic on March 11, 2020 [1]. COVID-19 has significantly increased mortality and morbidity worldwide, causing substantial economic, social, and political disruptions [2]. Globally, extensive efforts have been made to develop safe and effective vaccines for preventing and controlling COVID-19. Currently, approximately 13 different COVID-19 vaccines have been approved by WHO under the Emergency Use Authorization protocol [3]. In India, 12 COVID-19 vaccines are currently approved for use. However, the whole virion inactivated BBV152 coronavirus vaccine (COVAXIN; Bharat Biotech International

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Original Article

Assessment of knowledge, attitude, and practices of biomedical waste management among health care workers in a tertiary care hospital, Chengalpattu, Tamilnadu, India

Savetha P[1], Akshada S[2], Kannan I[1], Thenmozhivalli PR[1]

[1]Department of Microbiology, Tagore Medical College and Hospital, Chennai, India

[2]Under graduate MBBS student, Tagore Medical College and Hospital, Chennai, India

Corresponding author:
Dr. P. Savetha
Assistant professor
Department of Microbiology,
Tagore Medical College and Hospital, Chennai,
India
Tel.: +91 9655238069,
E-mail: dr.savetha@tagoremch.com
ORCID ID: https://orcid.org/0000-0002-4908-3092

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ABSTRACT

Introduction: Bio-medical waste (BMW) means any solid and/or liquid waste including its container and any intermediate product, which is generated during the diagnosis, treatment, or immunization of human beings or animals. Inadequate and inappropriate knowledge of handling healthcare waste may have serious health consequences and a significant impact on the environment. Thus, the study aims to assess the knowledge, attitude, and practice of biomedical waste management among healthcare workers from different strata in the hospital.

Methods: This was a cross-sectional study involving 383 participants conducted between June 2022 to October 2022. A structured, close-ended, self-administrated questionnaire was used to collect the data. The data were analyzed using R studio and presented as frequencies and percentages. The association between different variables was analyzed by the chi-square test.

Results: Most of the doctors (41.3%) and nurses (41.5%) had very good knowledge of Bio-Medical Waste Management (BMWM) but only 23.1% of laboratory technicians and housekeeping staff 18.2% showed very good knowledge. All the participants had a very good attitude (69.2% to 82.6%) towards BMWM but it needs some improvement concerning reporting needle stick injuries and taking post-exposure prophylaxis (PEP). More than 80 % of participants were immunized against Hepatitis B and followed the appropriate practice of BMWM except for wearing adequate personal protective equipment (PPE) while handling BMW. Knowledge and good attitude were observed to increase with experience.

Conclusion: From the study, it is identified that knowledge regarding BMWM is inadequate among the healthcare professions. It is concluded that there should be adequate training among the HCWs about BMWM like video lectures, symposiums, quiz programs, and role play that can help them update their knowledge.

Keywords: Biomedical Waste Management, Health care workers, Knowledge, attitude and practice study, Needle stick injury, Post-exposure prophylaxis.

Cytotoxic effect of Imeglimin on T47D and MDA-MB-231 cell Lines of Human Breast Cancer – An *In-vitro* study

Ramya Ravichandar[1], Anitha Elango[2]*

[1]Associate Professor, Department of Pharmacology, Tagore Medical College, Chennai.

[2]Associate Professor, Department of Pharmacology, Panimalar Medical College Hospital and Research Institute, Varadharajapuram, Poonamallee, Chennai.

*Corresponding Author E-mail: **dr.anishan@gmail.com**

ABSTRACT:

The aim of this study is to evaluate the *in vitro* cytotoxic activity of newer antidiabetic drug-Imeglimin by 3-(4,5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) test on breast cancer cell lines. T47D and MDA-MB-231 breast cancer cell lines were obtained from the NCCS, Pune. Cells (1×10^5/well) were plated in 0.2 ml of medium/well in 96-well plates and were incubated at 5% CO_2 for 72 h. Then, various concentrations of the samples were added in 0.1% DMSO for 48h at 5% CO_2 incubator. 20µl/well MTT reagent was added after removal of the sample solution and the viable cells were determined by the absorbance at 540nm using UV (Ultra-Violet)-spectrophotometer. The images of the cell viability were viewed under Inverted microscope 40X. Half maximal Inhibitory Concentration (IC_{50}) value was determined graphically. IC_{50} value of Imeglimin on T47D cells was established at 50µg and that of MDA-MB-231 cells was found to be at 87.5µg respectively. The results revealed that the Imeglimin exerts cytotoxic effect on both the breast cancer cell lines. Its effect on T47D cell line is more when compared to MDA-MB-231 cell line. Hence it may serve as a newer and cost effective treatment strategy for breast cancer patients.

KEYWORDS: Imeglimin, Half maximal Inhibitory Concentration, MTT (3-(4,5-dimethylthiazolyl)-2,5-diphenyl tetrazolium bromide),T47D cell line,MDA-MB-231 cell line.

INTRODUCTION:

In India, breast cancer stands foremost among the cancers in women. It has been projected that 1 in 29 females will develop breast cancer during their lifetime. The adverse effect profile of the various drugs used for treating breast cancer is very incapacitating to the patient[1-4]. The cost of therapy is quite high which leads to poor compliance in low socioeconomic group of population. Hence, it still remains a challenge to address these concerns and it is immensely important to search for novel and superior drugs[5,6].

Research has shown that triple negative breast tumors are often associated with a poor prognosis for breast cancer, and the majority of them are susceptible to drugs like Cisplatin that damage DNA[7].

Other, more modern, and potentially effective therapeutic options for TNBC are the Wnt/b-Catenin, Hedgehog, and NOTCH signaling pathways[8]. Triple negative disease patients now have an option to ptor targeted medicines, anti-antigenic drugs, and PARP inhibitors; however, their use are still restricted to clinical trials, and further research is required to uncover targets that generate good therapeutic ratios[9]. Only 8% (2/25) of the breast tumors in a different study that used genomic profiling to identify whether cells were estrogen receptor positive by IHC were found to be luminal, with the majority belonging to the basal (48%) and HER2 amplified (32%) cohorts[10]. Research investigated the effectiveness of Everolimus in conjunction with adjuvant Endocrine Therapy for individuals suffering from high-risk, non-metastatic, luminal Breast cancer[11,12]. In conclusion, the addition of mTOR/PI3K inhibitors to endocrine therapy in luminal Breast cancer has been effectively tested through game-changing clinical trials.

The development of new anticancer drugs demands enormous time and money posing a huge challenge for drug discovery. Repurposing of drugs is a striking pharmacological strategy explored in recent times. The repurposing of drugs approved for indications other than cancer is a successful approach to develop new and affordable drugs for the treatment of cancer[13]. Several studies have shown that Metformin, which belongs to biguanides group, is effective against different types of cancer including breast cancer, apart from treating type 2 diabetes mellitus[14].

Metformin exerts anticancer activity by lowering insulin levels and modulation of AMPK/mTOR/P70S6K pathway[15]. AMPK activation leads to EGFR down regulation, phosphorylation of p53, cell cycle arrest and induction of apoptosis[16]. By inhibiting mTORC1/P70S6K pathway, Metformin exerts antitumour effect in acute myeloid leukemia (AML)[17].

Imeglimin is a recently developed drug, structurally similar to Metformin. Imeglimin obtained its first approval for use in

Ferulic acid attenuates streptozotocin induced alternation in glycoprotein moiety via regulation of carbohydrate metabolic enzymes in rats

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Sundaram Ramalingam, Muthu Karuppiah & Prabhakaran J

Abstract

Ferulic acid is a naturally occurring polyphenolic compound that is generally found in plants, vegetables, and fruits. Although ferulic acid has been widely utilized to treat a variety of illnesses, there have been no studies done yet on its potential protective effects on the glycoprotein moiety in streptozotocin-induced diabetic rats. The goal of this study was to concentrate on this issue. Streptozotocin was administered intraperitoneally once to male Wistar albino rats to cause diabetes. Using commercial diagnostic kits, we assessed plasma glucose and glycated haemoglobin (HbA1c). Plasma insulin level was assayed with the help of an enzyme—linked immunosorbent assay (ELISA) kit and other assays were made biochemically. In diabetic rats, the levels of blood glucose and HbA1c

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Case Report

A dermatological odyssey: Levamisole's Triumph over warts, vitiligo, dermatophytosis, and pityriasis versicolor in a young patient

Abhinesh N[1], **Arisha Salam**[2]*

[1]*Dept. of Dermatology, Venereology and Leprosy, Tagore Medical College & Hospital, Chennai, Tamil Nadu, India*
[2]*Dept. of Dermatology, Andaman and Nicobar Islands Institute of Medical Sciences, Port Blair, Andaman and Nicobar, India*

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ABSTRACT

In our case, we observe the presence of various conditions within the same patient, including prevalent benign lesions caused by the human papillomavirus (HPV) known as warts. These warts, occurring in both mucosal and skin regions, can contribute to significant morbidity for affected individuals. Additionally, the patient exhibits vitiligo, a common acquired skin disorder characterized by well-demarcated white patches resulting from the loss of melanocytes in the epidermis. Although different theories exist regarding the pathogenesis of vitiligo, the exact etiology remains unknown. Alongside, the patient presents with two common fungal infections, namely pityriasis versicolor and dermatophytosis. The coexistence of all these dermatological conditions in a single patient highlights the complexity of the case.

1. Introduction

Warts, benign lesions caused by the human papillomavirus (HPV), can manifest in both mucosal and skin regions, with over 100 identified types of HPV. These lesions may occur at any site on the body. In contrast, vitiligo is an acquired pigmentary skin disorder characterized by the absence of pigmentary cells in the epidermis, resulting in white macules and patches. The condition is often associated with autoimmune disorders, with thyroid abnormalities being the most common. While the exact etiology of vitiligo remains unknown, various theories attempt to explain its pathogenesis. Vitiligo is further classified into three types based on distribution and pattern: generalized, segmental, and localized.

Additionally, pityriasis versicolor, also known as tinea versicolor, is a common, benign, superficial fungal infection affecting the skin. Clinical features include hyperpigmented or hypopigmented finely scaled macules, with the trunk, neck, and proximal extremities being the most frequently affected sites.

2. Case Report

A 25-year-old male patient, employed as a sailor in the Indian Navy, presented with complaints of multiple asymptomatic verrucous raised lesions on both upper and lower limbs for the past three months. Additionally, he reported asymptomatic flat white patches over the right shoulder and arm persisting for the past three years. The patient also experienced itching in the gluteal region and groin for the last month. Notably, there was no history of fever, atopy, or drug intake preceding the onset of these lesions. The patient mentioned a recent hospitalization for jaundice three months ago, after which the verrucous lesions appeared. During his hospital stay, he received treatment for jaundice and underwent a blood transfusion to address low hemoglobin levels.

* *Corresponding author.*
E-mail address: arisha.salam@gmail.com (A. Salam).

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Core Decompression with Bone Marrow Aspirate Concentrate Implantation in Osteonecrosis of the Femoral Head with a Minimum of 2-year Follow-up – A Pilot Study

S Ferozkhan[1], A P Sivakumar[2], Sathish Balaji Elumalai[2], Naveen Jeyaraman[3], Madhan Jeyaraman[3]

Learning Point of the Article:

Core decompression with bone marrow aspirate concentrate (BMAC) implantation demonstrates significant potential in delaying the need for more invasive treatments and improving pain and functional outcomes in osteonecrosis of the femoral head (ONFH).

Abstract

Introduction: Osteonecrosis of the femoral head (ONFH), resulting from impaired blood supply to the head of the femur, presents a significant challenge to clinicians due to its debilitating nature. Conservative treatment often offers insufficient pain relief and debilitating functional outcomes which necessitate alternative therapies. Bone marrow aspirate concentrate (BMAC), a potent orthobiologics and rich in mesenchymal stromal cells and growth factors, holds good promise as the minimally invasive procedure for ONFH. With the preceding research suggesting clinical and functional efficacy, we assessed the therapeutic effectiveness of BMAC in ONFH management in joint preservation.

Materials and Methods: A prospective cohort study was conducted with 20 patients suffering from ONFH who failed to respond to 6 months of conservative treatment. A uniform surgical procedure was performed by a single surgeon, involving bone marrow extraction from the anterior iliac crest and subsequent processing into an 8–10 mL of BMAC concentrate. The BMAC was then injected into the implanted into the decompressed femoral head. The post-operative protocol comprised weight-bearing mobilization, physiotherapy, and a 4-week NSAID-free regimen. Outcome measures included pain scores, hip function, knee symptoms, sports activities, patient satisfaction, and recommendation of the procedure.

Results: Of the 20 patients suffering from ONFH, primarily the left side, most of whom were at stage 2b, significant pain reduction and functional improvement were observed over 24 months. The mean pain score decreased from 9.00 to 3.55, while the hip function score increased from 46.12 to 88.60. However, some patients encountered complications such as symptom recurrence (5%), disease progression (10%), and persistent pain (5%).

Conclusion: Core decompression with BMAC implantation emerges as a promising, effective, and safe treatment for ONFH with better cost-effectiveness and minimal side effects, making it a feasible treatment alternative.

Keywords: Femoral head, osteonecrosis, bone marrow aspirate concentrate, decompression.

Introduction

Osteonecrosis of the femoral head (ONFH), a variant of osteonecrosis, arises due to an interruption in the blood supply of the proximal femur [1]. This subtype of osteonecrosis manifests following a disruption of the vascularization to the proximal femur. The incidence rate of ONFH observed through new case registrations per annum varies from 10,000 to 20,000 depending on geographical location [2]. Etiologies of the ONFH condition

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Author's Photo Gallery


Dr. S Ferozkhan


Dr. A P Sivakumar


Dr. Sathish Balaji Elumalai


Dr. Naveen Jeyaraman


Dr. Madhan Jeyaraman

[1]Department of Orthopaedics, Government Medical College, Ramanathapuram, Tamil Nadu, India,
[2]Department of Orthopaedics, Tagore Medical College and Hospital, Chennai, Tamil Nadu, India,
[3]Department of Orthopaedics, ACS Medical College and Hospital, Dr. MGR Educational and Research Institute, Chennai, Tamil Nadu, India.

Address of Correspondence:
Dr. Naveen Jeyaraman,
Department of Orthopaedics, ACS Medical College and Hospital, Dr. MGR Educational and Research Institute, Chennai, Tamil Nadu, India.
E-mail: naveenjeyaraman@yahoo.com

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Original Research Article

Unraveling the tapestry of adverse cutaneous drug reactions: A clinico-epidemiological study

Arisha Salam[1], **Abhinesh N**[2]*, **Rekha GP**[2], **Tejaswi Challa**[2]

[1]*Dept. of Dermatology, Andaman and Nicobar Islands Institute of Medical Sciences, Port Blair, Andaman and Nicobar Islands, India*

[2]*Dept.of Dermatology, Venereology and Leprology, Tagore Medical College & Hospital, Chennai, Tamil Nadu, India*

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Adverse cutaneous drug reactions
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ABSTRACT

Background: It is widely acknowledged that adverse drug responses on the skin can cause serious complications. Up to 2% of all adverse cutaneous medication eruptions are severe and life-threatening, however the majority of these reactions are benign. In order to quickly diagnose these grave cutaneous eruptions and start the necessary treatment, physicians should be aware of certain warning signs. To understand the causative drug, meticulous history and complete clinical examination is the key

Objective: Primary objective is to find the common group of drugs causing adverse cutaneous drug reactions. Secondary objectives are to study their morphology, gender and age distribution.

Materials and Methods: The cross-sectional study involved 130 patients. Informations inclùding relevant history, clinical examination details, and drugs taken were noted in the pretested proforma. Quantitative and qualitative data were collected and graphically analysed. Data was studied under various aspects which included causative drugs, clinical presentation, age and gender ratio. SPSS Version 21.0 was used for most analysis and Microsoft Excel 2010 for graphical representation.

Results: Maculopapular rash, acneiform eruptions, urticarial rash, exfoliative dermatitis and fixed drug eruptions were the commonest forms of clinical presentations seen in our study. The cutaneous drug reactions were classified as per the study of Agarwal et al.

Conclusion: The limitations of treating adverse cutaneous drug reactions are the varied range of clinical symptoms, the complexity of the various drug-host interactions, and the relative scarcity of laboratory tests that are available for any conclusive and confirmatory drug-specific testing. That's why knowledge of clinical presentations and common drugs causing it is a must.

1. Introduction

Drugs are substances that can heal, control, or prevent diseases. Negative drug responses occur when a drug causes an unwanted or detrimental consequence (ADRs). Roughly 5% of all hospitalizations are due to them.[1] An adverse cutaneous response caused by a drug is any change in the structure or function of the skin, its appendages, or mucous membranes.[2,3] The incidence of Cutaneous adverse drug reactions among both outpatients and hospitalized patients in the Indian population was found to be 9.22 per 1,000.[4] Up to 2% of all adverse drug eruptions are severe and life-threatening. Hence their sound knowledge is of key importance to save lives with the earliest interventions possible.

* *Corresponding author.*
E-mail address: abhineshdr@gmail.com (Abhinesh N).

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RATHINAMANGALAM, MELAKOTTAIYUR POST,
Chennai-600 127.

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Review Article

Revolutionizing dermatology: The role of artificial intelligence in clinical practice

Arisha Salam[1]*, **Abhinesh N**[2]

[1]*Andaman and Nicobar Islands Institute of Medical Sciences, Port Blair, Andaman and Nicobar Islands, India*
[2]*Tagore Medical College & Hospital, Chennai, Tamil Nadu, India*

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ABSTRACT

AI (Artificial Intelligence) has transcended the field of science fiction and become a crucial component of various industries, including healthcare. In dermatology, the incorporation of AI is reshaping clinical practices, diagnostics, and treatment strategies. This article delves into the transformative impact of AI in clinical dermatology, exploring its applications, benefits, and the evolving landscape of AI-driven advancements.

1. Introduction

Artificial intelligence (AI) holds a prominent position in the realm of computer science research, signifying a significant frontier in technological progress. Although AI has made substantial contributions to various medical fields over time, its integration into dermatology is a relatively recent and limited development.[1] Dermatologists, armed with a profound comprehension of AI concepts, can exploit the wealth of dermatoscopic and clinical data and images associated with skin conditions, positioning dermatology as a promising domain for AI applications in the field of medicine. Ongoing research encompasses diverse studies utilizing AI to tackle skin disorders like onychomycosis, atopic dermatitis, psoriasis, and skin cancer. This paper offers a comprehensive summary of AI, examining its current applications in dermatology and delving into potential future developments in this dynamic intersection of technology and skin health.[2]

The Association for the Advancement of Artificial Intelligence (AAAI) defines AI as "the scientific understanding of the mechanisms underlying thought and intelligent behavior and their embodiment in machines." Put simply, AI is a field of computer science that creates software with the goal of imitating human cognition and the analysis of complex data.[2,3]

2. Discussion

History: Mathematician Alan Turing authored a groundbreaking article titled "On Computable Numbers, With an Application to the Entscheidungs problem," which is widely acknowledged as the foundational work of the computer age. Collaborating with Princeton colleague Alonzo Church, Turing utilized calculus to introduce the notion of "effective calculability," establishing the basis for the computational model now recognized as an "algorithm".[3]

The term "artificial intelligence" (AI) was coined during a significant Dartmouth College conference in 1956. In the early 1970s, researchers in the medical field recognized the potential of AI applications in life sciences. However, technological limitations of the time hindered widespread AI use. Over the past two decades, advancements in computing power, fueled by improvements in hardware and software technologies, have increased awareness of AI's

* *Corresponding author.*
E-mail address: arisha.salam@gmail.com (A. Salam).

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DEAN
TAGORE MEDICAL COLLEGE & HOSPITAL
RATHINAMANGALAM, MELAKOTTAIYUR POST,
Chennai-600 127.

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Histone-Lysine *N*-Methyltransferase 2D (KMT2D) Impending Therapeutic Target for the Management of Cancer: The Giant Rats Tail

Meshak Dhanashekaran Cecileya Jasmin,[a,b] Narayanaswamy Radhakrishnan,[a,*] Venugopal Vinod Prabhu,[c] Kunnathur Murugesan Sakthivel,[d] & Rasmi Rajan Radha[e]

[a]Department of Biochemistry, Saveetha Medical College and Hospital, Saveetha Institute of Medical and Technical Sciences (Deemed to be University), Thandalam, Chennai, Tamil Nadu 602105, India; [b]Department of Biochemistry, Tagore Medical College and Hospital, Rathinamangalam, Melakottaiyur, Chennai, Tamil Nadu 600127, India; [c]PG Department of Microbiology, PERI College of Arts and Science, Tambaram, Mannivakkam, Chennai, Tamil Nadu 600048, India; [d]Department of Biochemistry, PSG College of Arts & Science, Coimbatore, Tamil Nadu 614014, India; [e]Department of Biotechnology, PSG College of Arts & Science, Coimbatore, Tamil Nadu 614014, India

*Address all correspondence to: Dr. Narayanaswamy Radhakrishnan, Professor, Department of Biochemistry, Saveetha Medical College and Hospital, Saveetha Institute of Medical and Technical Sciences (Deemed to be University), Thandalam, Chennai, Tamil Nadu- 602105, India; Tel.: +91 7305327126, E-mail: nrkishnanr@gmail.com

ABSTRACT: The histone-lysine *N*-methyltransferase 2D (KMT2D), tumor suppressor gene which is the major component of histone H3K4 mono-methyltransferase in mammals and has significant role in regulation of a gene which are frequently mutated that lead to many different types of cancers that include non-Hodgkin lymphoma, medulloblastoma, prostate carcinoma, renal carcinoma, bladder carcinoma and lung carcinoma. KMT2D gene epigenetic alterations in histone methylation play a significant role for the initiation and progression of cancers from pre-cancerous lesions, yet its complete function in oncogenesis remains unsolved. KMT2D deficiency - loss are thought of initial mediators of cancer development and cell migration such as B-cell lymphoma, medulloblastoma, melanoma, pancreas and lung cancer. The KMT2D loss has know to activate glycolytic genes that promote aggressive tumor progression. Therefore, the present review serves to underline the update on recent research pertaining to KMT2D gene, that could be a potential therapeutic target in downregulating glycolytic genes such as Pgk1, Ldha, Pgam1 and Gapdh; 2, epidermal growth factor receptor tyrosine kinase (EGFR-TK) - ERBB2, RTK-RAS signaling, RAS activator genes Rgl1, Rasgrp1, Rasgrf1, Rasgrf2 and Rapgef5 in suppressing the tumor progression that may represent novel targeted therapy for the management of cancer. This review will facilitate to understand the gene expression that inhibits cancer progression and which could serve as a potential molecular target in understanding cancer pathogenesis.

KEY WORDS: KMT2D, lung cancer, methyltransferase, tumor suppressor gene

I. INTRODUCTION

Histone-lysine *N*-methyltransferase 2D (KMT2D), histone H3K4 mono-methyltransferase in mammals located at chromosome region 12q13.12, which has an significant role in gene regulation, development of diseases and promotes cancer development.[1] H3K4 (methyl group on histone H3 lysine 4 residue) where the cells active promoters and enhancer are marked by tri-methylation H3K4 and mono- and di-methylation of H3K4 respectively.[2] In mammals there are six sets of H3K4 methyltransferases such as KMT2A, KMT2B, KMT2C, KMT2D, KMT2F and KMT2G.[1] Sequence homology studies of SET-containing enzymatic subunits have demonstrated that KMT2C and KMT2D are homologous to Trr (trithorax related), KMT2A and KMT2B are homologous to Trx and KMT2F and KMT2G are homologous to dSet1.[3] KMT2D have significant role in regulation of the gene which are frequently mutated that lead to cancer progression.[1] Epigenetic alterations of KMT2D histone methylation and acetylation are important for the initiation and progression of cancers from pre-cancerous lesions.[4] KMT2D are an predominant elements on enhancer regions and has limited efficient redundancy with KMT2C which has been proved in human colon cancer cell line HCT 116 cells.[4] KMT2D is also known to binds to specific enhancer region selectively that depends on the cell stage of

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Preparation, characterization of green synthesis FeO nanoparticles and their photocatalytic activity towards Basic Fuschin dye

P. Rama [a], V. Thangapushbam [a], S. Sivakami [a], M. Jothika [a], P. Mariselvi [b], R. Sundaram [c], K. Muthu [a]

[a] Department of Chemistry, Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, 627012, Tamil Nadu, India

[b] Department of Chemistry, Rani Anna Govt. College for Women, Tirunelveli, Affiliated Manonmaniam Sundaranar University, Tirunelveli, 627012, Tamil Nadu, India

[c] Department of Biochemistry, Tagore Medical College & Hospital, Rathinamangalam, Chennai, 600127, Tamil Nadu, India

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Molecular docking analysis of imeglimin and its derivatives with estrogen receptor-alpha

Anitha Elango[1], Iyanar Kannan[2], Ramya Ravichandar[*,3] & Punnagai Kumaravelu[3]

[1]Department of Pharmacology, Panimalar Medical College Hospital and Research Institute, Chennai; [2]Department of Microbiology, Tagore Medical College and Hospital, Chennai; [3]Department of Pharmacology, Tagore Medical College and Hospital, Chennai; *Corresponding author

Affiliation URL:
https://tagoremch.edu.in/

Author contacts:
Anitha Elango - E-mail: anitha.e@pmchri.ac.in; Phone: +91 9500096796

DEAN
TAGORE MEDICAL COLLEGE & HOSPITAL
RATHINAMANGALAM, MELAKOTTAIYUR POST,
Chennai-600 127.

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Aqueous Extracts of Glycyrrhiza Glabra Linn and Diosmetin Effect on Ambulatory and Behavioral Functioning in Wistar Rats with Ethanol-Induced Cognitive Impairment.

Dr. Sasikumar Arumugam[1], Dr. Subamalani S[2*], Dr. Balaji Arumugam[3], Dr. Jamunarani Srirangaramasamy[4]

[1]Associate Professor, Department of Physiology, Arunai Medical College and Hospital, Tiruvannamalai, Tamilnadu, India.606603.

[2]Associate Professor, Department of Physiology, Tagore Medical College and Hospital, Chennai, India.600127.

[3*]Professor & Head, Department of Community Medicine, Arunai Medical College and Hospital, Tiruvannamalai, Tamilnadu, India.606603.

[4]Professor & Head, Department of Pathology, Bhaarath Medical College Hospital, BIHER, Selaiyur, Chennai 600073

***Corresponding Author:**Dr. Subamalani S

*Associate Professor, Department of Physiology, Tagore Medical College and Hospital, Chennai, India.600127.

KEYWORDS

Diosmetin; Glycyrrhiza Glabra behavioural function; cognitive impairment

ABSTRACT

The aging process, exposure to various chemicals, radiation, and stressful situations can contribute to the degeneration of nerve cells in the brain, leading to cognitive decline. Alcohol-induced mild cognitive impairment (MCI) is a growing concern among middle-aged adults, affecting emotional response, memory, and learning processes. The hippocampal region, a crucial component of the limbic system, plays a primary role in memory and learning. Alcohol-induced MCI is associated with oxidative stress, cholinergic system damage, and inhibition of key receptors in various brain regions. Ethanol alters processes dependent on glutamatergic and dopaminergic inputs, resulting in cognitive impairment. Younger individuals may be more susceptible to ethanol's effects on motor and cognitive functions. This study explores the potential therapeutic benefits of natural products in mitigating ethanol-induced neurotoxicity, focusing on the aqueous extract of GGL (AqGg) and Diosmetin (Dm). AqGg, a herbal extract frequently used in the Indian medical system, is known for its memory and learning-enhancing properties. Diosmetin, a well-known antioxidant molecule, has shown promise in improving working memory and spatial learning. The research aims to investigate the antioxidant properties of AqGg and Dm in protecting against cognitive and ambulatory impairment induced by ethanol. The study includes an assessment of the impact on declarative and episodic memory, considering corticostriatal and limbic system-hippocampus connections

INTRODUCTION:

The nerve cells in the brain may die off as a person ages, is exposed to different chemicals or physical agents, is exposed to radiation, or experiences stressful situations. Due to excessive alcohol intake, alcohol-induced mild cognitive impairment (MCI) is a growing social issue among middle-aged adults. The ability to act on emotional experiences, remember past information, and identify new information is known as cognition. One of the limbic system's components and the primary area for memory and learning is the hippocampal region. The creation, storage, and retrieval of declarative and episodic/declarative memory at corticostriatal and limbic system-hippocampus connections depend on glutamatergic and dopaminergic inputs(Calabresi et al, 2016). Alcohol-induced MCI is brought on by oxidative stress, damage to the cholinergic system, and inhibition of the α-