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BALANCING RISKS AND BENEFITS: OPTIMAL EMERGENCY MANAGEMENT OF STROKE WITH A FOCUS ON ANTIPLATELET THERAPY

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Introduction

Stroke remains one of the leading causes of morbidity and mortality worldwide, necessitating prompt and precise management strategies (1). The distinction between ischemic and hemorrhagic stroke is critical in determining the appropriate therapeutic approach. Antiplatelet therapy, particularly with aspirin and clopidogrel, plays a key role in ischemic stroke management but carries significant risks if used inappropriately before stroke type confirmation (8). This review explores the balance between the risks and benefits of antiplatelet therapy in emergency stroke management and emphasizes the importance of accurate early diagnosis.

Types of Stroke and Their Emergency Management

Ischemic Stroke

Ischemic stroke accounts for approximately 87% of all strokes and results from an obstruction in cerebral blood flow due to thrombosis or embolism (1). Standard treatment includes thrombolytic therapy with recombinant

tissue plasminogen activator (rtPA) and the use of antiplatelet agents to prevent recurrent strokes (8).

Hemorrhagic Stroke

Hemorrhagic stroke results from intracranial bleeding due to vessel rupture, often associated with hypertension or aneurysmal rupture (9). Management focuses on blood pressure control, surgical intervention in selected cases, and the avoidance of antithrombotic medications (5). Administering antiplatelet therapy in hemorrhagic stroke can worsen bleeding, leading to devastating outcomes (3).

The Role of Antiplatelet Therapy

Aspirin and clopidogrel are widely used to prevent thrombotic events by inhibiting platelet aggregation (4). These agents are cornerstone treatments in secondary stroke prevention for patients with confirmed ischemic stroke or transient ischemic attack (TIA) (6). However, premature administration before confirming stroke type poses significant risks, particularly in hemorrhagic stroke cases (2).

Risks of Antiplatelet Therapy in Suspected Stroke Cases

The Danger of Misdiagnosis

Rapid differentiation between ischemic and hemorrhagic stroke is vital but challenging in emergency settings. Without imaging confirmation, administering antiplatelet therapy to a hemorrhagic stroke patient can increase intracranial bleeding and worsen outcomes (10). Early misdiagnosis has been linked to higher mortality rates and poorer functional recovery (7).

Case Studies and Incidents

Several case reports highlight instances where patients with hemorrhagic stroke received aspirin or clopidogrel prematurely, resulting in significant clinical deterioration (3). These cases underscore the necessity for strict adherence to imaging-based diagnostic protocols before initiating antiplatelet therapy.

The Importance of Early and Accurate Diagnosis

Neuroimaging remains the gold standard for stroke differentiation. A non-contrast CT scan is widely used for rapid hemorrhage detection, while MRI provides superior sensitivity for ischemic changes (10). Ensuring prompt access to imaging facilitates appropriate treatment selection and minimizes the risk of harmful interventions.

Guidelines for Initial Management Before Stroke Type Confirmation

1. **Assessment and Stabilization**

- Ensure airway, breathing, and circulation (ABCs) are stable (5).
- Administer oxygen if necessary and establish IV access.

2.Monitoring and Support

- Monitor vital signs and glucose levels to detect abnormalities that may mimic stroke (9).

3.Immediate Imaging

- Obtain a non-contrast CT scan urgently to differentiate ischemic from hemorrhagic stroke (10).

4.Avoidance of Antithrombotic Therapy

- Do not administer aspirin, clopidogrel, or anticoagulants until hemorrhage is ruled out (6).

5. **Symptomatic Treatment**

- Manage blood pressure cautiously based on stroke type (3).
- Treat seizures if they occur (7).

6. **Consultation and Referral**

- Engage a stroke specialist promptly and consider transfer to a designated stroke center if necessary (10).

Conclusion

The emergency management of stroke requires a careful balance between rapid intervention and avoiding harm. The inappropriate use of antiplatelet therapy in undifferentiated stroke patients carries substantial risks, emphasizing the necessity for timely neuroimaging. Healthcare professionals must adhere to evidence-based protocols to optimize patient outcomes and prevent catastrophic complications

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WITHDRAWAL OF RANITIDINE FROM US FDA

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The US FDA approved Ranitidine on 31/08/2004. It belongs to the category h2 receptor antagonists. The FDA said on April 1, 2020, that it is demanding manufacturers remove all prescription and over-the-counter (OTC) ranitidine medications off the market owing to nitroso dimethylamine (NDMA) contamination.

The FDA has cleared ranitidine for use in both adults and children from 1 month to 16 years old. Only children older than 12 years old were eligible for FDA approval of ranitidine, an over-the-counter medication for self-care use without a prescription.

Although increased quantities of N-nitroso dimethylamine (NDMA), a likely human

carcinogen, have just lately been found in numerous widely used medications, it was discovered decades ago. Ranitidine has been fully removed from the market whereas some drugs that are now known to contain NDMA have remained on the market. According to the International Agency for Research on Cancer, NDMA is probably carcinogenic. The FDA asked the immediate recall of all ranitidine products in April 2020 while continuing to evaluate the potential affected medications. The FDA did this because it believed that high temperatures, such as those that might be experienced during distribution, handling, or even standard storage settings, could result in a rise in NDMA levels. Shortly after, the European Medicines Agency advised the suspension of all ranitidine products in the European Union. Another appeal to the agency arguing that ranitidine has low shelf-life stability and gradually accumulates NDMA at high temperatures informed the decision. Evaluations revealed that while NDMA concentrations at the manufacturing site would be safe, they posed a danger of rising by the time of consumption. Although the tiny sample set, the greatest NDMA value remained significantly below the highest level seen in valsartan doses.

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PRESENT CONDITION OF PEDIATRIC CATARCT

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INTRODUCTION

A cataract is a clouding of the lens in the eye that causes a loss in vision. It is a common disorder that usually progresses gradually and can damage one or both eyes. Cataracts are most common in the elderly, although they can sometimes develop in children or younger people as a result of trauma, drugs, or other disorders.

ETIOLOGY OF INFANTILE CATARACT

The etiology of infantile cataracts varies, with unilateral and bilateral cataracts having different causes. The majority of bilateral congenital or infantile cataracts are connected to genetic abnormalities, usually autosomal dominant, but their etiology is unknown.

The number of genes linked to cataract development exceeds 15. Moreover, prenatal infections, metabolic diseases, and syndromes like trisomy 21 have been linked to bilateral cataract development.

Unilateral cataracts are frequently the product of local ocular dysgenesis and are neither hereditary nor associated with systemic illnesses.

Pediatric cataracts can also be caused by trauma, and cases that remain unexplained may need to be

looked into for possible child abuse. Early intervention is necessary for healthy eyesight development.

TYPES

Congenital cataracts: Some babies are born with or develop cataracts in childhood, often in both eyes. These may not always affect vision, but those that do often need to be removed.

Secondary cataracts: These cataracts form due to another illness, like diabetes or an eye problem, or from medications such as steroids.

Traumatic cataracts: Cataracts can also result from an eye injury, appearing immediately or years later.

Symptoms of Cataracts

Blurred vision

Difficulty seeing at night

Sensitivity to light and glare

Halos around lights

Fading or yellowing of colors

Double vision in one eye

CASE PRESENTATION

- ✓ **Case 1**

An 8-month-old girl presented with leukocoria, noted since 5 months old. Her father and brother had bilateral congenital cataracts. After negative infectious screenings, she underwent bilateral lens aspiration and other procedures at 9 months. At 14 months, she developed posterior capsule opacification in the left eye, which was surgically addressed. Post-surgery, she maintained good visual acuity and orthophoria. Currently 2 years old, she is on a 6-month follow-up for refraction and is compliant with spectacle wear**.**

- ✓ **Case 2**

A 1-month-old boy presented with leukocoria in August 2018. His mother and sister had congenital cataracts. Genetic testing revealed both have the Nance Horan Syndrome gene. He underwent bilateral lens aspiration and capsulotomy but remained aphakic. Two months later, he needed anterior vitrectomy for right eye complications. Post-surgery refraction showed +21.00DS in the right eye and +20.00DS in the left. At 11 months, he is visually rehabilitated with contact lenses and aphakic glasses and continues follow-up care.

Pediatric Cataracts: A Focus of WHO's Vision 2020

Under WHO's Vision 2020, pediatric cataracts—an avoidable cause of blindness—are given priority. In low-income nations, factors like low socioeconomic position and insufficient healthcare contribute to their increased frequency. According to our research, there were 77.53% bilateral cataracts and 66.29% idiopathic cases with an average presentation age of 4.75 years. The most prevalent symptom was leukocoria (66.67%).

Bright Futures: The Critical Need for Early Pediatric Cataract

Early management of pediatric cataracts can significantly improve the lives of affected individuals and their families, reducing social, emotional, and economic challenges. Childhood blindness results in about 70 million blind-person-years, with 10 million due to cataracts.

In India, approximately 280,000–320,000 children are visually impaired, costing an estimated $3.5 billion. Increased community awareness, early detection, and prompt treatment can help eliminate this issue by 2020.

Conclusion

Pediatric cataracts pose a significant global health challenge. Early symptom recognition, understanding etiology, and timely intervention are crucial for effective management. WHO's Vision 2020 highlights the need to address this issue, especially in low-income countries. Raising awareness and providing prompt treatment can greatly reduce blindness from pediatric cataracts, improving the quality of life for affected children and their families.

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DRAVET SYNDROME

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INTRODUCTION

One of the uncommon early childhood intractable epileptic encephalopathies linked with pleomorphic seizure activity, cognitive decline, motor abnormalities, and behavioural abnormalities is the Dravet syndrome (DS), also known as severe myoclonic epilepsy of infancy (SMEI). The most frequent type of seizure in DS is convulsive. The progression and permanence of behavioural problems and cognitive deterioration follow the initial episode of seizure-like activity. Alpha-1 subunit of the voltage-gated calcium channel gene (SCN1A) de-novo genetic mutation is the most frequent cause seen in people with DS. When a clinical diagnosis of DS is not obvious, genetic testing is advised. Cannabinoids, anti-epileptic medications, ketogenic diet therapy, and

surgical procedures such deep brain stimulation and vagal nerve stimulation are some of the available treatments for DS. Due to drug-resistant epilepsy in DS, additional therapies are needed.

Due to drug-resistant epilepsy in DS, additional therapies are needed.

Epileptogenic activity during the brain's growth stage causes behavioural regression or degeneration, as well as cognitive impairment, which is a phenomena known as epileptic encephalopathy. A mutation in the voltage-gated calcium channel, alpha-1 subunit (SCN1A) gene on chromosome 2q24 was identified as the genetic cause of Down syndrome in 2001.

After the onset of seizures in infancy, neurodevelopmental deficits escalate to severe neurologic dysfunction as DS becomes older. It shows up as persistent motor and cognitive impairment in adults. Convulsive, myoclonic, absence, focal, obtundation status, and tonic seizures, among other seizure types, are all common in DS. Ataxia, tremors, dysarthria, pyramidal, and extrapyramidal symptoms are some of the indicators of motor system dysfunction . In addition to linguistic impairment, the majority of patients also experience cognitive impairment, executive dysfunctions, visual perception, and visual motor integration . Patients display angry, agitated, compulsive, preservationist, and hoarding behaviour. Patients with DS have a higher infant death rate, while some make it to adulthood. The most frequent causes of mortality are status epilepticus and sudden unexpected death in epilepsy (SUDEP).

Valproic Acid or Clobazam as a first option. Add the second line if the first option is ineffective.

Second-line addition of topiramate, stiripentol, or a ketogenic diet. When combined with Clobazam and Valproic acid, stiripentol is employed. Traditional Ketogenic Diet, Traditional or Modified Atkins Diet, and Modified Atkins Diet are the recommended diets for people who have been overweight for more than 12 years.

Third-line treatment options include phenobarbital, levetiracetam, zonisamide, ethosuximide, and vagus nerve stimulation (VNS). Ethosuximide is used to treat atypical absence seizures. With testing at a Comprehensive Evaluation Center, VNS is advised.

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THE USE OF CANNABIS AND ALCOHOL IN THE DEVELOPING BRAIN OF ADOLESECENCE.

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During adolescence, sex hormones and white (and grey) matter in the limbic system, cortex, and other brain regions alter. Neuroimaging tools that improve resolution and rapid acquisition have allowed us to investigate neuromaturation in greater detail than at any time before, permitting us to recognise sex differences and similarities in brain development.

Significant social, emotional, cognitive, and physical changes occur during adolescence as people pass from childhood to adulthood. Although there are many different definitions of adolescence, most recent research on adolescent growth and development includes people between the ages of 10 and 24.1 The human brain continues to develop until around age 25, which is consistent with this set of age ranges.

Overall, adolescent brain volume does not change; however, the volume of the grey and white matter undergoes notable microstructural changes. In particular, the volume of grey matter (i.e., neuronal cell bodies and dendrites) increases until about the age of 12 to 14, after which it decreases as a result of synaptic pruning, changes in the extracellular matrix, and encroachment by white matter.

As neural connections are optimised, white matter, which is made up of neuronal axon tracts that connect grey matter regions, develops linearly until the mid-20s. Significant socioemotional and cognitive development are connected to these structural alterations in grey and white matter between the ages of 10 and 24. While higher-order cognitive abilities like cognitive control, decision-making, planning, and working memory take longer to develop, emotion and reward-related regions of the brain mature fully during adolescence.

In addition to a decreased capacity to control emotions and behaviours, it is thought that these neural changes during adolescence contribute to increased sensation seeking, impulsivity, and reward responsiveness. It is also thought that this disparity between cognitive control and reward leads to increased risk-taking, including the start and progression of substance use. Youth are more susceptible to the potentially serious and long-lasting effects of substance use due to these neural changes.

The idea that substance use disorders are developmental issues that start in adolescence and have negative effects on people their entire lives is being supported by new research.The most widely used substances during adolescence are alcohol and cannabis, which are typically first used during this critical time in neurodevelopment. Adolescent substance use patterns range from low and irregular to heavy and problematic. Alcohol is the most frequently used substance worldwide, with rates peaking at 41% for those aged 20 to 24. 27% of 15 to 19-year-olds reported using alcohol in the previous month.

Poorer long-term outcomes are associated with early alcohol use; the prevalence of lifetime alcohol use disorder is 41% for those who start drinking by age 12, compared to 17% and 11% for those who start drinking at ages 18 and 21, respectively. Cannabis is the second most popular drug used during adolescence, and usage rates are rising everywhere, especially when it comes to daily use. The highest rates of cannabis use among 15 to 16-year-olds in the past year were found in Oceania (18%), the Americas (12%), and Europe (12%). Use rates rose over time and peaked among 20 to 24 year-olds.

It is crucial to comprehend how alcohol and cannabis use affect adolescent brain development given the high rates of alcohol and cannabis use during adolescence and the significant neural maturation that takes place during this time.

On these subjects, there have been other reviews, but they have their limitations. Within each substance use group, existing reviews specifically concentrate on alcohol,cannabis, or co-use, with some concentrating only on neuropsychological, or neuroimaging studies.

In order to meet the requirements for a prospective longitudinal neuropsychological and neuroimaging study in humans, this review aims to provide a thorough overview of the most recent literature that is both focused on alcohol, cannabis, and alcohol and cannabis co-use use during adolescence and meets these requirements. Future directions for research are discussed, as well as the limitations of current studies.

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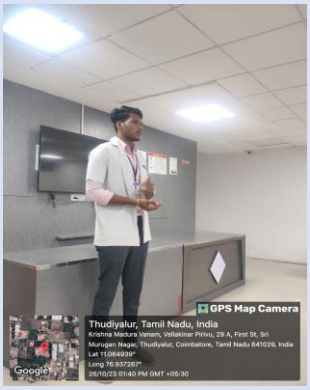
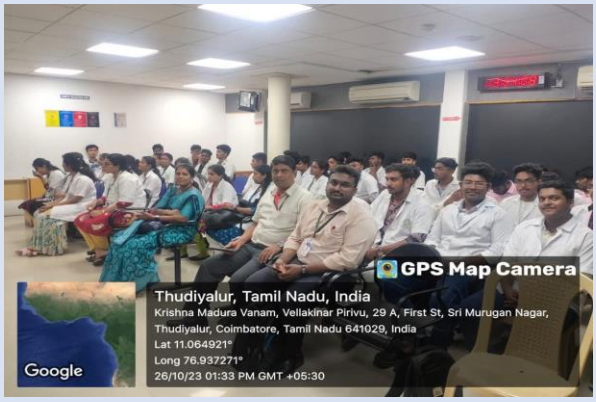
DEPARTMENTAL ACTIVITIES

ONE-DAY INDUSTRIAL VISIT

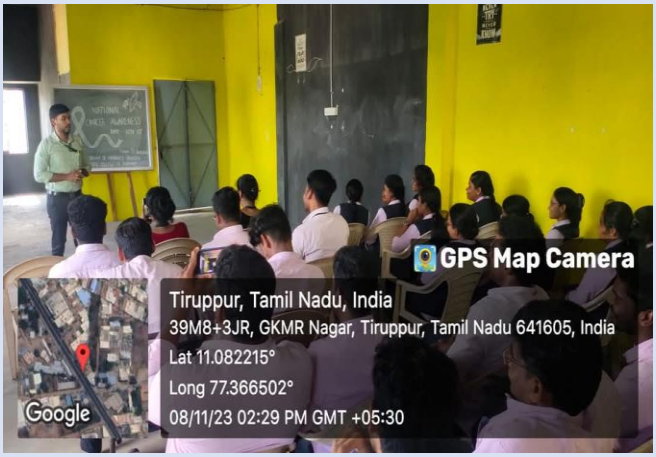
DR. D. KRISHNA KUMAR Professor and Head of the **Department of Pharmacy Practice** at **The Erode College of Pharmacy** organized a **One-Day Industrial Visit** to **Spinos Life Science and Research Private Limited**, Coimbatore, on **October 26, 2023**. A group of **45 students** from **B.Pharm (VIII-Sem) and II & VI Year Pharm.D programs**, accompanied by faculty members **Mr. S. Stanley Baskar, Mrs. S. Vanitha, Dr. T.S. Thirugnanam, and Dr. M. Boopathiraja** (Assistant Professors), actively participated in this enriching experience.

During the visit, the **dedicated team at Spinos Life Science and Research** provided invaluable insights into various aspects of **clinical research**, including **data collection, analysis, and ethical considerations**. The session offered students a **practical understanding of the industry's research methodologies and regulatory frameworks**, enhancing their academic learning.

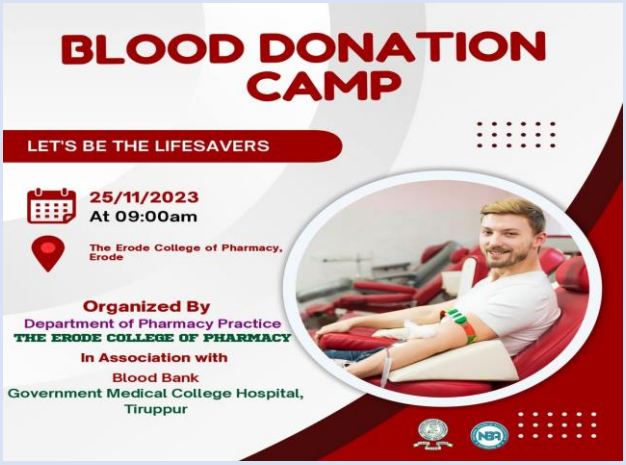




DR. D. KRISHNA KUMAR Professor and Head of the **Department of Pharmacy Practice** at **The Erode College of Pharmacy, Erode**, organized a **Cancer Awareness Programme** on **November 7, 2023**, at the **Drug Information Centre, Tiruppur Government Medical College Hospital, Tiruppur**. **Internship students** actively participated in the event, contributing to its success. The program was efficiently coordinated by **Mrs. Smitha Sarah Thambi, Dr. M. Boopathiraja, and Dr. Gopika Krishnan**, ensuring an informative and engaging session.

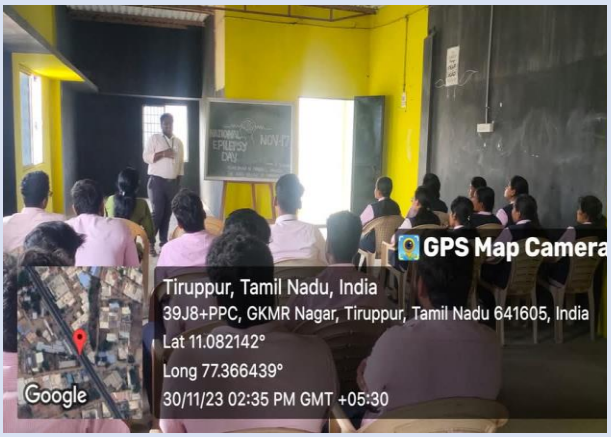


DR. D. KRISHNA KUMAR Professor and Head of the **Department of Pharmacy Practice** at **The Erode College of Pharmacy, Erode**, is organizing a **Blood Donation Camp** on **November 25, 2023 (Saturday),** in collaboration with the **Blood Bank, Government Medical College Hospital, Tiruppur**. This initiative aims to **raise awareness about the importance of blood donation**, encourage **voluntary donors**, and contribute to **saving lives**. Students, faculty, and staff are encouraged to participate and support this noble cause.



On **November 30, 2023**, the **Department of Pharmacy Practice, The Erode College of Pharmacy, Erode**, in collaboration with **Pharm.D Intern students**, conducted an **Epilepsy Awareness Program** at the **Drug Information Center, Tiruppur**, for **National Epilepsy Day**.

The session featured a **welcome address** by **Dr. T. S. Thirugnanam**, an **overview of epilepsy** by **Dr. Gopika Krishnan**, and **informative presentations** by **Pharm.D Interns**, concluding with a **vote of thanks** by **Dr. M. Boopathiraja**.



BLOOD DONATION CAMP

The **Department of Pharmacy Practice** organized a camp on **November 25, 2023**, at the **Erode College of Pharmacy**. Conducted in collaboration with **NSS, YRC, RCC, and the Blood Bank, Tiruppur Government Medical College Hospital**, under the coordination of **Dr. D. Krishnakumar, Professor & Head, Department of Pharmacy Practice**.

A total of **153 students** were screened, and **102 units** of various blood groups, including rare **O-negative and B-negative**, were donated by faculty members. **Volunteer donor certificates** were issued, and the **Erode College of Pharmacy** received an **appreciation certificate** from the **Blood Bank, Tamil Nadu State Blood Transfusion Council, and Tiruppur Government Medical College Hospital** for its contribution.

NATIONAL CPR AWARENESS PROGRAMME

DR. D. KRISHNA KUMAR Professor and Head of the **Department of Pharmacy Practice** at **The Erode College of Pharmacy, Erode**, organized the **National CPR Awareness Programme** on **December 6, 2023** following the directives of the **Pharmacy Council of India (PCI), India IN**.

The program, launched by **NBEMS, New Delhi**, featured a **video screening at the ECP Auditorium**, providing **Pharm.D students** with crucial insights into **Cardiopulmonary Resuscitation (CPR)**. The session aimed to **enhance awareness, educate students on life-saving techniques, and emphasize the significance of immediate response during medical emergencies**.