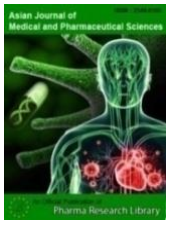

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Epilepsy: A Brief Review on Types and management Strategies

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A B S T R A C T
Epilepsy is a disorder that affects many aspects of a patient's life and is common in both children and adults. It is associated with significant morbidity. Two-thirds of epilepsy patients are managed by well-established antiseizure medications, but a significant number are still looking for alternatives. This review aims to provide an overview of recent developments in paediatric patients' treatment-resistant epilepsy management. New pharmaceutical options like fenfluramine and cannabidiol, some of which have been tested specifically in patients with childhood-onset epilepsy syndromes like Dravet's and Lennox-Gastaut's, have recently been shown to be effective. Additionally, Dravet's syndrome patients now have access to a previously unavailable treatment option thanks to stiripentol's recent FDA approval. Last but not least, the effectiveness of implanted responsive neurostimulation devices for direct cortical stimulation and deep brain stimulation in adult patients has been demonstrated, and these devices may open up a thrilling new world for children. Although the clinical course and prognosis of epilepsy are significantly influenced by the etiology, the current classifications of epilepsy do not provide any specific information about the etiology. A classification (database) of epilepsy etiologies is proposed in this article. Epilepsy's etiology can be broken down into four categories according to this model: cryptogenic, symptomatic, provoked, and idiopathic. Subcategories are suggested and these are defined. Included is a commentary that addresses the following issues: epilepsy as a disease rather than a symptom, symptomatic versus idiopathic epilepsy, focal versus generalized epilepsy, acquired epilepsy, acute symptomatic epilepsy, risk factor analysis, provoked epilepsy, genetic and developmental epilepsy, and epilepsy as a disease rather than a symptom are all examples of problems associated with assigning causation.
Keywords: Epilepsy, FDA, genetic, antiseizure

A R T I C L E I N F O

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C o n t e n t s

1. Introduction

The recurrence of unprovoked seizures is a hallmark of epilepsy, a brain condition. In most cases, prognosis refers to the likelihood of seizure freedom with treatment, but little is known about the natural history of the condition if it is not treated. The prognosis and prognostic predictors of treated and untreated epilepsy, as well as its various syndromes, are summarized here. Epilepsy is typically a relatively benign condition. Although epilepsy syndromes have varying Outcomes and responses to treatment, the majority of epilepsies have a favorable prognosis for complete seizure control and eventual discontinuation of AEDs. Aetiology, abnormalities in the electroencephalogram (EEG), the type and number of seizures experienced prior to the start of treatment, and

adverse drug effects early on are all prognostic factors. While the history of a high number of seizures at the time of diagnosis, intellectual disability, and symptomatic aetiology are negative predictors, early response to treatment is a significant positive predictor of long-term prognosis. It is possible to identify a variety of prognostic patterns, indicating that the epileptogenic process is dynamic. Epilepsy comes with a higher-than-expected chance of dying young. The single most significant risk factor for premature death is etiology.

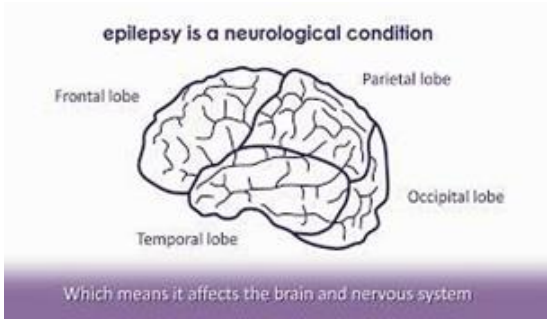

Fig.1

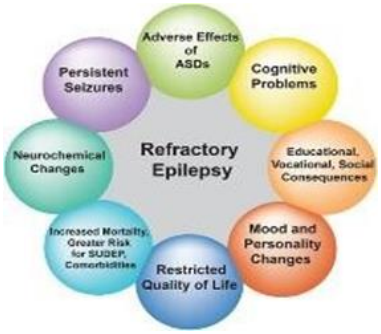

Fig.2

Causes

- During birth low oxygen level
- Head injury
- Tumors of brain
- Genetic abnormalities, such as tuberous sclerosis

2. Pathophysiology of Epilepsy

Repeated seizures are a common symptom of the chronic brain disease epilepsy. It has a significant impact on people's lives and health systems, affecting 65 million people globally. There have been reports suggesting the pathophysiology of epilepsy involves variables that cause neuronal injury and ion channel dysfunction. Appropriate treatment targets are still difficult to identify, and the precise etipathogenic pathway is unknown. Recent research indicates that nonneuronal cells called glia, particularly astrocytes and microglia, play a major role in the pathophysiology of epilepsy. To better understand the role of glia in the pathophysiology of epilepsy, this article critically assesses the role of gliainduced hyper excitability. In a model of chronic focal epilepsy, prominent gliotic scar formation was found to be a common symptom. Most likely, gliosis is present in all forms of epilepsy [4]. Gliosis is a reactive nonspecific change that occurs in glial cells, particularly microglia and astrocytes, in response to a variety of CNS damage and repair [5]. The severity of the damage and the types of injuries may influence the nature and extent of these changes. Some obvious characteristics of reactive gliosis include the hypertrophy of the cell bodies and processes. In these processes, certain proteins, like vimentin and glial fibrillary acidic protein, are expressed more frequently.

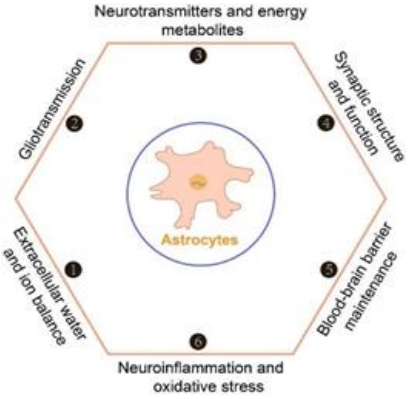

Fig.3: Involvement of astrocytes in different processes

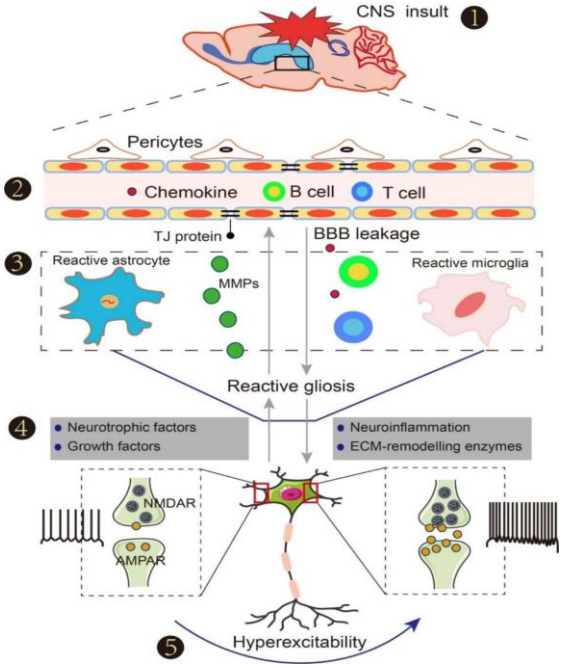

Fig.4. Connection of seizures and reactive gliosis after insults to CNS

According to some studies, seizures and astrogliosis do not interact in any way, and there is no connection between the two conditions. One study found no gliosis in the nonlesional epileptogenic cortex when resected brain tissue from patients with focal cortical dysplasia. Pilocarpine administration increased seizure frequency in epileptic mice immediately, according to a study, which found no correlation between reactive gliosis and the loss of GABA-ergic interneurons in the dentate gyrus. According to the aforementioned findings, gliosis is an essential component of epilepsy histopathology and is involved in a wide range of epileptogenesis, but not all types of epilepsy.

Etiologic Classification

Idiopathic and symptomatic epilepsy:

Idiopathic epilepsy is an epilepsy that is primarily genetic or is thought to be genetic and does not have any obvious neuroanatomical/ neuropathologic abnormalities. Epilepsies with a presumed multigenic or complex inheritance that currently lack a clear genetic basis are included here. Symptomatic epilepsy, which is characterized by gross anatomic or pathologic abnormalities and/or clinical features that point to an underlying disease or condition and can be attributed to an acquired or genetic cause. As a result, we include developmental and congenital disorders that are associated with pathologic changes in the cerebral cortex, whether they are acquired or genetic (or even cryptogenic).

Provoked epilepsy:

Provoked epilepsy is epilepsy in which a specific systemic or environmental factor is the primary cause of the seizures and there are no gross causative changes in the brain's anatomical structure or neuropathology. There will be genetic and acquired causes for some "provoked epilepsies," but there will often be no inherent cause. The reflex epilepsies are remembered for this class (which are typically hereditary) as well as the epilepsies with a noticeable seizure precipitant. This category is in this "database," but the most recent commission report does not include it.

Acquired epilepsy:

When discussing “symptomatic” epilepsies, the term “acquired” is used to exclude the majority of cases that are due to hereditary or developmental factors. The word encompasses epilepsies resulting from internal pathologic processes (such as tumors, neurological illnesses, and autoimmune disorders) as well as those resulting from external or environmental sources. The phrase “provoked epilepsy” refers to epilepsies caused by systemic nonneurologic disorders (such as fever, metabolic changes, and reflex epilepsy) that do not exhibit neuropathologic symptoms.

Acute symptomatic epilepsy:

One term that should probably be dropped is “acute symptomatic epilepsy.” Currently this is used to include: (1) “causes” that are better included as “provoking factors” (2) acute brain injury, which are included as “symptomatic” causes. Both types cannot be included within one single category as their clinical features differ from one another.

Cryptogenic epilepsy:

Cryptogenic epilepsy is epilepsy that is presumed to be symptomatic but whose cause has not been determined. At least 40% of adult-onset epilepsy cases fall into this category, despite the fact that the number of such cases is on the decline.

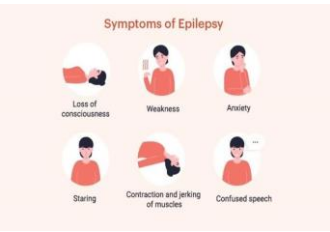

Fig.5

Symptoms of Epilepsy

Emotional changes, Irritability, Depression, Fear, Elation Anger, Anxiety, Headache, Funny feeling, Confusion, Menstrual symptoms, Polyuria, Speech disturbance, Childish behavior, Urge to defecate, Limb weakness, Trembling

3. Diagnosis

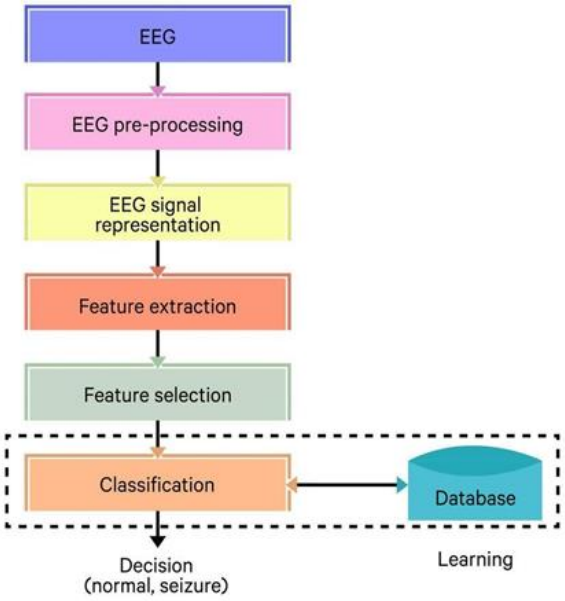

Fig.6

Clinical diagnosis:

Automatism may manifest differently in young children, older children, or adults. Young children may experience an automatic seizure, characterized by sudden rushing and holding their mother with an expression of fear, as if they were afraid of an attack. When we know for sure that the attacks are caused by epilepsy, we have to ask the parents when they happen most frequently; when you are awake, asleep, awake, or drowsy.

Laboratory examinations:

Laboratory exams should include blood sugar, calcium, phosphorus, magnesium, creatine kinase, and lactic acid, especially in youngsters. In cases of intractable epilepsy, CSF lactate, urine organic and amino acids, or other specialized testing may be required.

Eeg:

- Electroencephalography identifies the epileptic form EEG activity, this helps in the diagnosis of epilepsy. Localized slow-wave activity is also important to note since it can indicate an underlying brain dysfunction.
- The occurrence of a particular EEG pattern, such as rolandic discharges or 3-Hz spike-wave complexes, indicates a particular epileptic diagnosis and course of treatment.
- The patients’ clinical aura and seizure presentations can be explained by the location and lateralization of the epileptogenic EEG foci. The location and lateralization of epileptogenic foci in patients undergoing epilepsy surgery should be

appropriately assessed. Consideration should be given to EEG exams, which may involve specialized electrodes such zygomatic, supraorbital, sphenoidal electrodes.

- It's possible that the initial EEG evaluation missed the epileptiform EEG anomaly. Furthermore, on many EEG exams, a small percentage of patients exhibit no abnormalities related to epilepsy (1). In these situations, the only basis for diagnosing epilepsy is the clinical history of the episodes.
- It's not always the case that epileptiform EEG abnormalities signify the presence of epileptic seizures. Unintentionally, children without seizure disorders are found to have genetically specified epileptic EEG abnormalities, such as photosensitivity, generalized fast or 3-Hz spike-wave complexes, and rolandic spike discharges. These findings on the EEG suggest that the existence of convulsive disorders in close relatives may run in the family.
- Localized epilepsy as children with epilepsy age, their EEG focus may become diffuse, multifocal, or change in location.

Allopathy

Typically, doctors start treating epilepsy with medication. Surgery is the last resort if medicine is unable to cure the illness. Drugs The following are some anti-epileptic

Ayurveda

Ayurveda medicine treats epilepsy in a multifaceted manner that incorporates disease- and host-specific measures along with pharmacologic and nonpharmacologic methods. Ayurveda emphasizes that when treating epilepsy, it's crucial to concentrate on assurance, comorbidity management, and illness modification rather than merely seizure control.

Unani

Unani medicine is far superior to allopathic medicine in that it has no negative side effects. Majun e Sara: 10 gm taken before meals; dose: 5 gm after meal, Majun e najah: 10 gm taken before meals; Majun e sara and safoof kishniz: combined Black cumin (Kala zeera): combine 2 ml honey with 1 ml black cumin seed oil in 10 ml lukewarm water.

Habb-e-azaraqi: take 1 pill with water twice a day.

Dawaul misk motadil sada: take 5 gm with milk.

Dawaushifa: take 1 tablet with water at bedtime. Consume it twice daily.

Home Remedies

- Ashwagandha
- Coconut oil
- Garlic
- Lemons
- Jatamansi
- Jadwar
- Lemons

4. Conclusion

Epilepsy is a chronic brain disorder characterized by recurrent seizures. The International League against Epilepsy (ILAE) has developed a classification system that categorizes epilepsy into several types, including idiopathic, symptomatic, cryptogenic, and provoked. Epilepsy can be caused by various factors, including genetic mutations, brain injuries, infections, and developmental disorders. The etiology of epilepsy can be classified into four categories: idiopathic, symptomatic, provoked, and cryptogenic.The pathophysiology of epilepsy involves changes in brain structure and function, including neuronal injury, ion channel dysfunction, and gliosis. Recent studies have highlighted the role of glial cells, particularly astrocytes, in the development and progression of epilepsy. This article discusses several types of epilepsy, including: Idiopathic epilepsy, Symptomatic epilepsy, Provoked epilepsy, Cryptogenic epilepsy, Acute symptomatic epilepsy. Overall, this article provides a detailed overview of epilepsy, its classification, etiology, pathophysiology, and types.

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