

A Comparative Review on Epilepsy and its Treatment Options

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Abstract: Today, people are confronted with various types of stress in everyday life and the majority of people around the world are affected by various neurological diseases. Epilepsy is one of the most common brain diseases that affects about 50 million people worldwide, 90% of whom come from developing countries. Genetic factors, brain infections, strokes, tumors, high fever and other diseases cause epilepsy. It places a heavy economic burden on the health system in countries where stigma and discrimination are found against patients and their families, especially in communities, workplaces, schools and homes. Many epilepsy patients suffer from severe emotional pain, behavioral disorders and extreme social isolation.

Keywords: Epilepsy

I. INTRODUCTION

Epilepsy is a condition where a person is repeatedly epilepsy. Crash is defined as abnormal discharges from brain nerve cells and temporary impairments of motor, sensory or mental functions. There are many types of convulsions, depending mainly on the brain. The term epilepsy does not speak of type or cause of seizures, but seizures occur repeatedly. A strict definition of this term requires that the cause of the shock does not have any underlying cause. This disease can also be called primary or idiopathic epilepsy. An abnormal electrical activity in the brain causes convulsions. A specific area of the brain affected by abnormal electrical activity may cause a specific convulsion. If all parts of the brain are affected by abnormal electrical activity, there can be generalized seizures. This means that consciousness is lost or damaged. Normally, all the body and legs are stiff, then swing rhythmically. During the seizures, one type of seizure can evolve into another. For example, the seizure may begin as a partial or focal seizure involving the face or arms. Then the muscle activity spreads to other parts of the body. Consequently, seizures are generalized. Children's fever-induced pain is not considered epilepsy.

Causes of Epilepsy

In healthy people, seizures may occur under certain circumstances. If the cause of the convulsion is known, it is called secondary epilepsy or symptomatic epilepsy. The most common causes include cancer, chemical imbalances such as blood sugar and sodium, head injuries, some toxic chemicals or drug abuse, alcohol withdrawal, stroke, bleeding, and birth injuries.

Epilepsy Classification:

Generalized seizures:

1. Generalized tonic-clonic seizures or Grand mal
2. Absence seizure or petit mal
3. Atonic seizure
4. Myoclonic seizure

Partial or focal seizures:

1. Simple partial seizure
2. Complex partial seizure
3. Simple partial seizure or Complex partial seizure secondarily generalized.

Adverse Effect

Seizures, seniles, vertigo, diarrhea, vomiting, diarrhea, anorexia. Acute drug abuse causes coma, convulsions and cardiovascular collapse. High sensitivity reactions include skin irritation, photosensitivity, liver disease, and syndromes similar to lupus. Due to hypersensitivity, leucopenia is more common. It is also teratogenic in nature [1].

Epidemiology

Epilepsy is one of the most common neurological diseases [2]. India has 55 epilepsy patients, 20 in the United States and 3 in the United Kingdom. In the United States, there are 120 people per 100,000 who come to medical attention each year due to a new, recognised seizure. At least 8 per cent of the population has at least one epilepsy. The incidence of recurrence of the first non-provoked convulsion within 5 years varies from 23 to 80%. According to age adjustment, the incidence of epilepsy is 44 per 100,000 people per year. There are about 125,000 cases of epilepsy each year, 30 per cent of which are diagnosed at the age of 18. The relatively high frequency of epilepsy in older people is now recognized. At least 10% of patients receiving long-term care use at least one antiseptic (AED) [4]. The National Epilepsy-related Death Assessment of the National Sentinel, led by Epilepsy-Lawyers, brought attention to this important issue. According to the audit, "1,000 people die each year in the United Kingdom from epilepsy", most of them from convulsions, and 42% of them are potentially avoidable [5].

Pathophysiology

Changes in potassium conductivity, diseases of voltage-gated ion channels, and the absence of membrane ATPases involved in ion transport can cause brain membrane instability and seizures. Some neurotransmitters (such as histamine, peptides, acetylcholine, glutamate aspartate, cytokines, corticotropine-releasing factors, norepinephrine, purines, and steroids) increase neuron excitability and propagation, while GABA and dopamine reduce neuron excitation and propagation. The need for blood to float in the mind increases during a seizure to remove CO and provide a substrate for the metabolic interests of the two neurons. As the symptoms of the brain progress, it develops further ischemia, leading to neuron loss and mental damage. [6] Some types of epilepsy are associated with some gene mutations. Generalized epilepsy and infant seizures are linked to genes that encode protein subunits in ligand-activated ion channels and voltage-sensitive neurons.[7]

Symptoms of Epilepsy

A cluster of brain neurons is responsible for the high frequency, episodic discharge of impulses that is associated with the hallmark seizure occurrence of epilepsy. The clinical signs and symptoms of seizures are determined by the location of the epileptic discharges in the cortex, as well as the extent and pattern of the discharges' propagation throughout the brain. For instance, involvement of the motor cortex results in convulsions, involvement of the hypothalamus generates peripheral autonomic discharge, and involvement of the upper cerebral (27) stem results in unconsciousness.[8]

Diagnosis

A number of different tests have been developed to determine the epilepsy in an individual and its type

EEG Monitoring: An EEG is a useful diagnostic tool for many different types of epileptic diseases. Even while many persons without epilepsy may have aberrant brain activity, some patients may have normal EEGs despite having a clinical diagnosis of epilepsy. Electroencephalography (EEG) is often used in conjunction with video surveillance to determine the type of seizures a person is experiencing.

Brain scan: Finding cysts, brain tumors, and other structural abnormalities in the brain can be done with a brain scan, which is an essential diagnostic tool.

Health Background: To diagnose epilepsy and determine the sort of seizure a person is having, medical history regarding the patient's symptoms and seizure length can be consulted.

Blood test: Seizures can occasionally be the result of acute underlying toxic or metabolic diseases; in these situations, appropriate medication should be taken to address the particular anomaly, such as hypocalcemia. Blood samples are routinely examined for metabolic or genetic disorders that may be linked to the seizures. [9]

Management Of Epilepsy

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The terms "anticonvulsant" and "antiepileptic" are used in different ways. An anticonvulsant is an agent that stops seizures in laboratory animals that are raised for experimental purposes, and an antiepileptic is a medication used medicinally to control the 32 epilepsies.[10]

Principles of Management

1. Any causative factors of epilepsy must be treated, e.g. cerebral neoplasm.
2. The patients should be educated about the disease, duration of treatment and need for compliance.
3. Precipitating factors should be avoided, e.g. alcohol, sleep deprivation, emotional stress.^[11]

Mechanism of action antiepileptic agent

Antiepileptic medications act through three main mechanisms: (i) reduction of cell membrane electrical excitability, particularly (by blocking) voltage-dependent sodium channels that generate the inward current that results in an action potential; (ii) enhancement of GABA mediated synaptic inhibition, either through direct GABA agonist drugs or by inhibiting GABA transaminase, which increases membrane permeability to chloride ions, thereby reducing cell excitability; (iii) blocking T-type calcium channels, which is essential for regulating absence seizures, or by blocking excitatory neurotransmitters. like glutamate. [12–13]

II. CONCLUSION

Epilepsy is a serious brain condition that affects not only the person but also their parents and community, according to the World Health Organization (WHO). Despite the fact that epileptic affects only 1-3 %, it has a massive financial effect and a fatality rate. The genesis, kind, and location of epileptic foci are determined using a variety of diagnostic methods. It's critical to get an accurate diagnosis and begin therapy as soon as possible. Despite the fact that there are 29 antiepileptic drugs available in the United States, one-third of individuals are resistant to pharmacologic treatment. Other treatments should be sought for those patients in order to improve their quality of life and reduce their morbidity. The following statement should not be interpreted as a complete collection of recommendations, but rather as a starting point for constructing specific standards.

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