

What is Epilepsy?

Epilepsy is a common neurological disorder that manifests itself as fits or seizures. It is characterised by abnormal electrical activity in the brain and is associated with sudden recurrent episodes of loss of consciousness, sensory disturbances or convulsions.

What is the prevalence?

Epilepsy is one of the most prevalent non-communicable neurological conditions, effecting more than 70 million people worldwide. It has been identified as an important cause of disability. The incidence of epilepsy has a bimodal distribution, with the highest risk been observed in infants and older age groups. But it must be emphasized that epilepsy doesn't discriminate between ages or sexes. Of all the different types of epilepsy, approximately two-thirds are partial seizures and one-third are generalised. But of those, which are partial, two-thirds have an unknown underlining aetiology.

Causes of epilepsy

Seizures are only a symptom and the underlining cause of epilepsy is due to a variety of reasons including:

- Head injury
- Chronic alcohol and drug abuse
- Stroke or brain haemorrhage
- Brain infection including meningitis, encephalitis
- Brain malformations
- Brain tumours
- Genetic factors
- Degenerative conditions affecting the brain e.g. Alzheimer's

However in the majority of cases (greater than 50%) the underlining cause is unknown.

Types of seizures

(1) *Partial Seizures/Focal epilepsy*

(2) *Generalized seizures*

(3) *Unknown*

Diagnosis

(1) *Physical and neurological exam:* This encompasses taking the patient's medical history, including family history of seizures, associated medical conditions and current medications. Seizure description by the patients and or a witness aids in the diagnosis of epilepsy.

(2) *Electroencephalogram (EEG) test:* It records the electrical impulses in the brain for 20-30 minutes.

(3) *Brain imaging:*

Magnetic resonance imaging (MRI): to determine the presence of structural lesions in the brain.

Positron Emission Tomography (PET) scans: looks at glucose metabolism in the brain.

(4) *Blood tests:* To help rule out the presence of other ailments.

(5) *Long term video EEG monitoring:* Diagnosis allow for the simultaneous recording of electrical activity of the brain and observation of patients over a 3 to 5 day period. Long term VEM is the only definitive way to diagnose epilepsy.

Treatment

Antiepileptic Drugs

Drug therapy has shown to have an adequate response in approximately 60-70% of patients with epileptic seizures. A number of difference drug combinations are used to control seizures depending on the type of seizure acquired by patient. Most patients with new-onset epilepsy that achieve complete seizure control do so with the first or second medication they have tried, regardless of the drug used

Vagal nerve stimulator

It is a pulse generator device that is surgically implanted in the chest that is connected to the vagus nerve in the neck through a lead that transmits electrical signals. By stimulating the vagus nerve the brain's potential ability to generate abnormal electrical impulses, manifesting itself as seizures, is significantly reduced. However this treatment is not a substitute for taking medication, but it done when medications are not effective. This treatment has shown to improve the quality of life by reducing the frequency of seizures experience by the patient with intractable epilepsy.

Surgery

Surgery is considered an option when patients are showing signs of drug resistance and are continuing to experience high frequency of seizures despite medication. These patients also have evidence showing that the seizures originate from a small area of the brain (partial seizures). Surgery may also be conducted on those who have no evidence of a brain lesion on the MRI. Epileptic surgery is highly effective with durable benefits and simultaneously improves the quality of life.