



Epilepsy: A Neurological Disorder its Causes and Diagnosis

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DESCRIPTION

Epilepsy is a noncommunicable chronic brain illness that affects roughly 50 million people globally. Recurrent seizures, which are brief bursts of uncontrollable movement affecting a region of the body (partial) or the full body (generalised), and which may include loss of consciousness and control over bowel or bladder function, are what set it apart. Seizures are caused by excessive electrical discharges in a cluster of brain cells. These discharges can occur in a variety of locations of the brain. Seizures can range from little muscular jerks or concentration lapses to severe convulsions that linger for a long time. Seizures can also range in frequency, from fewer than one per year to several per day.

Causes

Epilepsy is not infectious. Although many underlying disease mechanisms can cause epilepsy, the cause of the disease remains unknown in approximately 50% of cases worldwide. The causes of epilepsy are classified as structural, genetic, infectious, metabolic, immune, and unknown. Prenatal or perinatal causes of brain damage (e.g., a lack of oxygen or trauma during birth, low birth weight); congenital abnormalities or genetic conditions with associated brain malformations; a severe head injury; a stroke that restricts the amount of oxygen to the brain; a brain infection such as meningitis, encephalitis, or neurocysticercosis, certain genetic syndromes; and a brain tumour are examples.

Diagnosis

The onset of seizures and their underlying causes are often used to diagnose epilepsy. An Electro Encephalogram (EEG) to check for aberrant brain wave patterns and neuroimaging (CT scan or MRI) to investigate brain structure are usually included in initial studies. Despite several attempts, identifying a distinct epileptic diagnosis is not always attainable. Video and EEG monitoring may be useful in difficult instances. An electroencephalogram can help to display brain activity that may indicate a higher risk of seizures. On the basis of symptoms, it is only advised for those who are most likely to have experienced an epileptic seizure. Electroencephalography can be used to determine the type of

seizure or syndrome that is occurring when determining the epilepsy diagnosis. Unless otherwise directed by a specialist, it is typically only required in children after a second seizure. It can't be used to rule out a diagnosis and could result in false-positive results in healthy people. In some circumstances, it may be beneficial to conduct the EEG while the affected person is dozing off or otherwise sleep deprived. After a first non-febrile seizure, diagnostic imaging by CT scan and MRI is advised to look for structural issues within and around the brain. CT is a more sensitive and accessible imaging test when bleeding is suspected; otherwise, MRI is generally a better imaging test. Imaging tests may be performed later if someone has a seizure and goes to the emergency room but quickly gets better. It is typically not necessary to repeat imaging if a person has previously been diagnosed with epilepsy and has undergone previous imaging, even if they experience additional seizures. Adults should have their electrolyte, blood glucose, and calcium levels checked to rule out problems caused by these factors. An ECG can rule out abnormalities with cardiac rhythm. A lumbar puncture may be useful in diagnosing a central nervous system infection, but it is not always necessary. Additional tests, such as urine biochemistry and blood testing to detect for metabolic abnormalities, may be required in children. Genetic testing, together with EEG and neuroimaging, is rapidly becoming one of the most important epilepsy diagnostic approaches, as a diagnosis may be made in a considerable proportion of patients with severe epilepsies, both in children and adults. For people who have had negative genetic testing, it may be necessary to repeat or re-analyze past genetic studies after 2-3 years. A high blood prolactin level within the first 20 minutes after a seizure may be helpful in distinguishing an epileptic seizure from a psychogenic non-epileptic seizure. The level of prolactin in the blood is less effective for detecting focal seizures. An epileptic seizure is nevertheless conceivable if it is normal, and serum prolactin does not distinguish epileptic seizures from syncope. It is not suggested as a routine element of the epilepsy diagnosis.

Prevention

Around 25% of epilepsy cases can be avoided. The best way to stop post-traumatic epilepsy is to prevent head injuries. Proper

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perinatal care can lower the number of new cases of epilepsy brought on by birth trauma. The risk of febrile seizures can be decreased by using medications and other techniques to lower a feverish child's body temperature. The reduction of cardiovascular

risk factors, such as actions to prevent or control high blood pressure, diabetes, and obesity, as well as abstaining from tobacco and excessive alcohol use, is the main goal of the prevention of epilepsy associated with stroke.