ETHIOPIAN INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 12, Issue 01, January-2025 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980 2024: 7,662

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HIPPOCAMPAL SCLEROSIS: CLINICAL AND PATHOPHYSIOLOGY

ABSTRACT: Hippocampal sclerosis, also known as Ammon's horn sclerosis or medial temporal lobe sclerosis, is commonly associated with intractable epilepsy and manifestations of late neuronal patterning and gliosis in the medial temporal lobe structures. Hippocampal sclerosis is found in epilepsy, often intractable epilepsy; in most cases, this condition is amenable to individualized surgical intervention. Being the most common histological diagnosis in adults who have undergone surgery for epilepsy, hippocampal sclerosis is characterized by a peculiarity of pathogenesis and requires a multidisciplinary approach to its diagnosis and individually.

KEY WORDS: Hippocampal sclerosis, Sturge-Weber, Alzheimer's, Major, Epilepsy.

Hippocampal sclerosis is a neurological disease that occurs in patients with epilepsy. Its main symptom is memory loss. In the vast majority of cases, hippocampal sclerosis occurs in patients with forms of epilepsy that are not amenable to drug treatment, especially mesial temporal lobe epilepsy. According to various data, sclerosis is found in 30-65% of patients with this diagnosis. With this disease, there is a progressive disruption of the structure of the hippocampus, the area of the brain responsible for memory, as well as nearby structures. Hippocampal sclerosis can also occur against the background of malformations of the cortex and blood vessels, for example, in Sturge-Weber syndrome.

The exact cause of the development of hippocampal sclerosis cannot be determined. Typically, epileptologists talk about the complex influence of a group of factors of various origins, including genetic predisposition, history of febrile seizures, inflammation and brain injury. Some evidence suggests that risk factors for developing hippocampal sclerosis include onset of epilepsy before age 4 and prolonged seizures. The main symptom of hippocampal sclerosis is memory loss. Such people may forget names, requests, where they put their things, where they are going, or what day it is. Symptoms of hippocampal sclerosis are very similar to Alzheimer's disease, which can lead some doctors to misdiagnose older patients. A significant difference between these two diseases is that with hippocampal sclerosis, impairments in visual-spatial information processing and basic executive functions (attention control, action planning, etc.) are not observed. The history of epilepsy due to hippocampal sclerosis is described mainly on the basis of numerous studies evaluating the effectiveness of surgical treatment of temporal lobe epilepsy. A frequent event in the anamnesis is an indication of an acute pathology of the central nervous system suffered in childhood (usually up to 5 years): febrile seizure status, neuroinfection, head injury. Stereotypical seizures begin between the ages of 6 and 16 years, and there may be a so-called latent period, which is determined by the time between the initial precipitating damage and the development of the first seizure. It is also not uncommon for situations when between the first seizure and the development of pharmacoresistance, a period passes, designated as “silent”. This feature of the course of the disease indicates its progressive nature. A characteristic cognitive deficit in FH may be memory loss, especially during uncontrolled attacks. Since hippocampal sclerosis usually develops against the background of temporal lobe epilepsy, many patients have auras - specific sensations that precede epileptic seizures.

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Sometimes seizures in the temporal lobe put patients into a state where they do not react to the outside world for 0.5-2 minutes. During this period of time, they may stare at one point, smack their lips, chew, swallow, or make repetitive movements with their fingers.

Repeated attacks of epilepsy deepen damage to the hippocampus. Therefore, the first strategy of doctors is to stop the epileptic activity. Given that a large number of patients with hippocampal sclerosis do not respond to medical treatment, such people are usually good candidates for surgery. The main surgical treatment for hippocampal sclerosis is temporal lobe resection. The procedure allows achieving improvement in 75-95% of patients, and completely eliminating seizures in 68-85%. Using modern neurosurgery techniques, this operation is performed accurately and delicately, preserving the functions of important parts of the brain. The operation to treat hippocampal sclerosis involves removing the affected parts of the brain associated with the occurrence of epileptic seizures. Typically, an experienced neurosurgeon will remove about 3-3.5 cm of the inferior and middle temporal gyri, the uncus, part of the amygdala, and the anterior 2-3 cm of the hippocampus and adjacent parahippocampal gyrus. Before surgery, the language areas of the brain are usually mapped so that the surgeon can see clearly boundaries of areas that are important to leave intact. After surgery, it is highly likely that patients will need to continue taking anti-epileptic drugs. There is a possibility that auras and seizures will return after 1-2 years, however, they will not be as frequent as before the operation.

Although temporal lobe resection is one of the most common surgeries for epilepsy, there is still a small risk of developing postoperative complications - mental disorders, problems with vision, thinking and speech, infections, bleeding, cranial nerve insufficiency and fluid accumulation. However, in 99% of patients the intervention takes place without such complications.

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