

Neurochemical Theory of Epilepsy Pathogenesis

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ABSTRACT

In the article, in light of the hypothesis about the pathogenesis of epilepsy the author considers certain clinical manifestations of epilepsy, touches upon the neurochemistry of behavior, as well as the neurotransmitter hypothesis of schizophrenia. According to the hypothesis, in epileptic patients, epileptogenic substances are permanently accumulating in the brain, which in the course of epileptic activity in the brain undergo metabolic changes requiring their removal from the organism. When the concentration of epileptogenic substances in the brain reaches a threshold value, they cause a seizure, and in lower concentrations, they cause epileptic activity typical for the interictal period. In the context of this hypothesis, there are discussed the clinical signs of epilepsy such as forced normalization, reinforcement epilepsy activity during sleep deprivation, and one of the paradoxical effect of antiepileptic drugs such as phenomenon when antiepileptic drugs prescribed cause an improvement of the electroencephalographic image but the clinical deterioration and increasing frequency of seizures, and the change of antiepileptic drugs give us the opposite results: improvement of the clinical picture and the deterioration of the electroencephalographic image. It was proposed to call this phenomenon “clinical-electroencephalographic dissociation”. According to the supplemented hypothesis, epileptogenic substances, except that, during epileptic activity in the brain undergo metabolic transformations necessary for their removal from the body; there are also alternative transformation neurochemical pathways necessary for their further removal (elimination) from the organism. The hypothesis discusses the modern principles of epilepsy treatment. The presented theory also considers the biological antagonism of schizophrenia and epilepsy. During brain epileptic activity is released both epileptogenic and psychogenic substances. At the same time epilepsy is demonstrated, while schizophrenia is not. The role of the blood-brain barrier in the development of epilepsy is considered.

Keywords: Epilepsy, Neuro mediators, Forced normalization of electroencephalogram image, Behavior, Biological antagonism of schizophrenia and epilepsy, Blood-brain barrier

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