

*SUMMARY  
AND  
CONCLUSION*

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Epilepsy is a common medical condition, affecting 0.5-1% of all children. The highest incidence of epilepsy is in the first year of life often with significant morbidity. It is not a simple disorder, but a group of CNS disorders, characterized by certain clinical, biochemical and electroencephalographic abnormalities. The features common to all seizures is an abnormal synchronous neural discharge in the brain.

The amino acid excitatory neurotransmitters glutamate and aspartate have been consistently implicated in the pathophysiology of human epilepsy. GABA and glycine act as inhibitory neurotransmitter. Thus, deficiencies of inhibitory amino acids, or excessive amounts of excitatory amino acids, result in local disturbances of neuronal activity, which could then lead to epileptic seizures.

Pyridoxine is essential for the synthesis of glutamic acid decarboxylase, which in turn is required for the synthesis of GABA. Pyridoxine achieve not only remission of epilepsy but also normalization of CSF glutamate.

Glutamate dehydrogenase (*GDH*), which is one of the source enzymes of glutamic acid and is important in both energy metabolism and neurotransmission, is intimately involved in the pathophysiology of the epileptic focus, where it is released in amounts proportional to the intensity of epileptic activity.

Therefore, treatment involves the prevention of the abnormal synchronous neural discharge in brain or reducing its spread. With appropriate classification, most children with epilepsy are well controlled on one antiepileptic medication without side effects.

Trace elements are often more concentrated in the hair than in body fluids. In addition, hair analysis provides information about intracellular accumulations of trace elements. Epilepsy can alter the ratio data of some trace elements specially copper, zinc, magnesium and manganese. In addition, long-term treatment with anticonvulsants has been reported to alter concentrations of Cu, Zn and Mg in serum.

Scalp hair can be used as a possible indicator of trace element abnormality. Differences in the levels of trace elements in hair might occur due to epilepsy whether the patient was on long-term anticonvulsant or not. Long-term anticonvulsants therapy could induce alterations in both the metabolism and distribution of copper, zinc, magnesium and manganese. Thus, the possibility of disturbances in the metabolism of brain trace elements should be considered in planning the treatment of epilepsy.