Fourth paper

Titel:Epileptiform electroencephalogram changes in children with congenital sensorineural hearing loss.

By

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Abstract

Objectives: This work was designed to study electroencephalogram findings in children with congenital sensorineural hearing loss and correlate these findings with the sensorineural hearing loss parameters as duration, etiology, severity and type.

Methods: This work included 90 children with bilateral congenital sensorineural hearing loss served as the study group. They were free from any neurological disorders or symptoms that are commonly associated with abnormal electroencephalogram as convulsions or loss of consciousness. Twenty children having normal hearing with no history of otological or neurological disorders served as the control group. All children participating in the study were subjected to full medical and audiological history, otological examination, neurological examination, audiological evaluation and electroencephalogram recording.

Results: Mean age of the children in the study group was 3.56 ± 2.1 years and mean age of the children in the control group was 3.8 ± 2.2 years. While none of the control children had abnormal electroencephalogram, 38 (42.2%) of children with congenital sensorineural hearing loss had epileptiform electroencephalogram abnormality. The epileptiform abnormality was generalized in 14 children (36.8%), focal temporal in 17 children (44.7%) and focal other than temporal in 7 children (18.4%). According to the hemispheric side affected, the abnormality was right in 14 children (36.8%), left in 10 children (26.3%) and bilateral in 14 children (36.8%). No statistically significant predominance of specific site or side of the epileptiform abnormality was found. Similarly, no statistical significant prevalent of the epileptiform abnormality was found in relation to the age or sex of children, duration of hearing loss or etiology of hearing loss (i.e., genetic vs. neonatal insults). On the other hand, the epileptiform abnormality was statistically prevalent in children with moderate degree of hearing loss, and in children with auditory neuropathy spectrum disorder.

Conclusions: The epileptiform encephalogram abnormality is a common finding in children with congenital sensorineural hearing loss especially those with auditory neuropathy spectrum disorder, suggesting the affection of the central nervous system despite the absence of neurological symptoms or signs. These findings raise the question of the requirement of medical treatment for those children and the effect of such treatment in their rehabilitation.

Key words: Sensorineural hearing loss, Electroencephalogram, Epilepsy, Auditory neuropathy spectrum disorder