

EEG and ABER Abnormalities in Children with Speech and Language Delay

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Abstract : Speech and language delay (SLD) is seen commonly as a co-morbidity in children having severe resistant focal and generalized, syndromic and symptomatic epilepsies. It is however not clear whether epilepsy contributes to or is a mere association in the pathogenesis of SLD. Also, it is acknowledged that Auditory Brainstem Evoked Responses (ABER), besides used for evaluating hearing threshold, also aid in prognostication of neurological disorders and abnormalities in the hearing pathway in the brainstem. There is no circumscribed or surrogate neurophysiologic laboratory marker to adjudge the extent of SLD. The current study was designed to evaluate the abnormalities in Electroencephalography (EEG) and ABER in children with SLD who do not have an overt hearing deficit or autism. 94 children of age group 2-8 years with predominant SLD and without any gross motor developmental delay, head injury, gross hearing disorder, cleft lip/palate and autism were selected. Standard video Electroencephalography using the 10:20 international system and ABER after click stimulus with intensities 110 db until 40 db was performed in all children. EEG was abnormal in 47.9% (n= 45; 36 boys and 9 girls) children. In the children with abnormal EEG, 64.5% (n=29) had an abnormal background, 57.8% (n=27) had presence of generalized interictal epileptiform discharges (IEDs), 20% (n=9) had focal epileptiform discharges exclusively from left side and 33.3% (n=15) had multifocal IEDs occurring both in isolation or associated with generalised abnormalities. In ABER, surprisingly, the peak latencies for waves I, III & V, inter-peak latencies I-III & I-V, III-V and wave amplitude ratio V/I, were found within normal limits in both ears of all the children. Thus in the current study it is certain that presence of generalized IEDs in EEG are seen in higher frequency with SLD and focal IEDs are seen exclusively in left hemisphere in these children. It may be possible that even with generalized EEG abnormalities present in these children, left hemispheric abnormalities as a part of this generalized dysfunction may be responsible for the speech and language dysfunction. The current study also emphasizes that ABER may not be routinely recommended as diagnostic or prognostic tool in children with SLD without frank hearing deficit or autism, thus reducing the burden on electro physiologists, laboratories and saving time and financial resources.

Keywords : ABER, EEG, speech, language delay

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