Effects of Sodium Valproate, Levetiracetam and Phenytoin Therapy on Evoked Potentials in Children with Epilepsy

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To the Editor: Visual evoked potential (VEP) and brainstem auditory evoked potential (BAEP) have been used to study the effects of antiepileptic drugs (AED) on visual and auditory pathways among adults, with limited studies on children [1–4]. This cross-sectional study included 36 children (aged 5–15 y) with epilepsy on AED for a duration, not less than 6 mo and 34 healthy controls. Antiepileptic drugs that were used included valproate (VPA) [14 (39%)], phenytoin (PHT) [11(31%)], and levetiracetam (LEV) (3(8%)). Rest were on combination of VPA/ clobazam (CLB) [4 (11%)], VPA/LEV [2 (5.5%)] and VPA/LEV/CLB [2 (5.5%)]. Majority of the epilepsy was idiopathic [29 (81%)] followed by neurocysticercosis in the rest seven (19%) children.

All children underwent flash VEP and BAEP as per the standard protocol. P-100 latency on both the sides were comparable among Children with epilepsy (CWE) and controls [right side: 99.8 (20.5) vs. 104.1 (15.7); $p = 0.34$; left side: 98.2 (25.8) vs. 104.5 (15.1); $p = 0.25$]. Similarly, P-100 amplitudes were comparable except for N75P100 amplitude being higher in CWE compared to controls [right side: 11.8 (6.94) vs. 8.71 (3.55); $p = 0.02$; left side: 11.3 (7.08) vs. 7.33 (4.03); $p = 0.04$]. Peak latencies of waves I, wave III, wave V and interpeak intervals I-III and I-V of BAEP were comparable between the two groups.

AEDs decelerate central impulses and the transmission rate by increasing the effect of Gamma-aminobutyric acid (GABA) and causing sodium-channel blockade, resulting in

prolonged latency of P100 as well as P300 [5]. Adult studies have demonstrated prolonged wave III/ V absolute latency and I-III/I-V inter-peak latency (IPL) on BAEP and prolonged P-100 latencies and decreased N75P100, P100N145 amplitudes on VEP among patients on PHT, VPA and LEV [1–4]. The present study revealed that most of the VEP and BAEP characteristics were comparable between children with epilepsy on VLP, LEV and PHT either alone or in combination when compared to healthy controls. This study with a limited sample size shows that the use of conventional antiepileptic drugs for a duration of at least 6 mo in children with epilepsy are safe on the visual and auditory system.

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Compliance with Ethical Standards

Conflict of Interest None.

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