Relationship between Vitamin D and Brainstem Auditory Evoked Potentials (BAEPs)

Murat DOĞAN1, Ilıyas AYDİN2, Keziban BULAN1, Sultan KABA1, Özlem GÜLPINAR2
Yuzuncu Yil University, School of Medicine, Pediatrics, Pediatric Endocrinology Department1
Van Regional Training and Research Hospital, Department of Pediatrics2

Objective

It is known that vitamin D has differential roles in cell proliferation, differentiation, neurotransmission and neuromodulation in nervous system and exerts neurotrophic and neuroprotective effects, even different functions of vitamin D has been studied by advocating that vitamin D should be classified as a neurosteroid. It has been long known that vitamin D deficiency, VDR dysfunction, hyperparathyroidism and hypervitaminosis are potential causes for sensorineural hearing loss [1]. Here, we aimed to evaluate BAEPs (Brainstem Auditory Evoked Potentials) before treatment in patients with rickets.

Material and methods

This study included BAEPs (brainstem auditory evoked potentials) evaluations of 30 patients aged 0-15 years who were diagnosed as rickets in Child Endocrinology department of Yuzuncu Yil University, Prof.Dr.Dursun Odabaş Medical Center between January, 2014 and July, 2014.

Results

Mean age was 2.15±4.12 years (min-max: 0.07-15.13) in 30 patients with rickets. There were 8 girls (25.8%) and 23 boys (74.2%). When biochemical and hormone values were studied in patients with rickets, the following results were observed: mean calcium value, 8.09±1.52 mg/dL; mean phosphor value, 4.24±1.53 mg/dL; mean magnesium value 1.95±0.23 mg/dL; mean alkaline phosphate value 838.23±672.86 U/L; mean parathormone value, 314.82±310.76 pg/mL; mean creatinine kinase value, 173.58±239.73 U/L; mean albumin value 4.05±1.41 g/dL; and mean 25 OH vitamin D level 5.52±3.20 ng/mL.

Mean and standard deviations and maximum-minimum values were calculated for latencies of waves I, II, III, IV and V and I-III, III-V and I-V intervals in BAEP studies (Table 1). When BAEPs of bilateral ear were assessed together, it was found that there was prolongation in latency of wave I in 19 patients, (63.3%), in latency of wave II in 9 patients (30%), in latency of wave III in 19 patients (63.3%), in latency of wave IV in 4 patients (13.4%), in latency of wave V in 14 patients (46.6%) and in latency of interval I-III in 19 patients (63.3%), in latency of interval III-V in 13 patients (43.3%) and in latency of interval I-V in 20 patients (66.6%). A marked prolongation was detected in the latencies of waves I, II, V, I-III and III-V.

Conclusion

We intended to emphasize that there could be prolongation in BAEP studies in patients with rickets and that there should be need for detailed examination to monitor this prolongation in subsequent years.

References