



The relationship between auditory brainstem response, nerve conduction studies, and metabolic risk factors in type II diabetes mellitus

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Abstract:

Background Few studies have reported a correlation between auditory brainstem response (ABR) findings and nerve conduction studies (NCSs). The correlation between ABR findings and the metabolic profile of these patients is not well documented in previous studies. The present study was designed to investigate the impact of the disturbed metabolic profile (hyperglyceridemia and hyperlipidemia) in diabetic patients on the peripheral nervous system as well as the auditory brainstem response. **Aim** The present study aimed to detect the effect of diabetic control on the presence of abnormal ABR and/or peripheral nerve affection in Egyptian diabetic patients. **Patients and methods** The study was conducted on two groups: the diabetic group (n=68) and the control group, which was matched for age, sex, blood pressure, and BMI (n=60). All participants were subjected to clinical assessment, basic audiologic assessment, brainstem auditory evoked potential, NCS, and metabolic profile [serum level of glycated hemoglobin (HbA1c%) and lipid profile]. **Results** There was a significant increase in absolute wave latencies of ABR and interpeak latencies (IPLs) in the diabetic group compared with the control group. Twenty-six (38.2%) patients had abnormal ABR values. IPLs (I-III and III-V) were significantly negatively correlated with sensory conduction velocity of the sural, median, and ulnar nerves as well as F-wave latency of the posterior tibial, median, and ulnar nerves (P=0.01 and 0.001, respectively). Moreover, IPL III-V and sural sensory conduction velocity were significantly correlated with HbA1c% and total cholesterol, as well as triglyceride serum levels. **Conclusion** Brainstem dysfunction and ABR changes are common in patients with type II diabetes mellitus. These changes are significantly correlated to NCS parameters on one hand and serum HbA1c% and lipid profile (total cholesterol and triglycerides) on the other hand.

Keywords:

auditory brainstem response, cranial neuropathy, diabetes mellitus type II, glycated hemoglobin, lipid profile, metabolic profile, nerve conduction study, peripheral neuropathy

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