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Examinations of the brainstem function in diabetic patients

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Methods:

We performed brainstem auditory evoked potential (BAEP) examinations in patients with long-standing type-1 diabetes mellitus (DM). 12 middle-aged, non-obese, insulin-treated patients with DM of long duration were included. Cardiovascular reflex tests were applied for assessment of autonomic neuropathy. Peripheral sensory nerve function was studied with a Neurometer (Neurotron Inc., Baltimore), using constant current sine wave transcutaneous stimulation. Our aim was to compare the BAEP results of this patient group with controls and to look for the possible correlation between the alteration of the auditory brainstem function and the cardiovascular autonomic and the peripheral sensory neuropathy.

Results:

Analysis of the latencies (wave I, II, III and IV/V) and the inter-peak latencies (IPL I-III: and I-IV/V) of BAEP revealed a significant difference between diabetics and healthy controls at 16 Hz stimulus rate. The amplitudes of wave I, II, III and IV/V were definitely lower in comparison with healthy controls. These differences were more definite at high frequency stimulation (64 Hz). A positive correlation was observed between the overall autonomic score (AN) and the latencies (wave III and V) and IPL-s (I-III, I-V). Evaluation of the peripheral sensory nerve function revealed positive association current perception thresholds (CPT at 2 kHz and 250 Hz) and wave latency values (wave III and V).

Conclusions:

Several parameters of autonomic and sensory neuropathy consequently worsen together with abnormalities of brainstem function. Our data support the hypothesis that diabetic neuropathy might be manifested in certain dysfunctions of the central auditory pathways.

