1- Evaluation of central effects of diabetes mellitus by multimodal evoked potentials and brain magnetic imaging tests

Aim: To evaluate the central nervous system affection in patients with diabetes mellitus.

Subjects and methods: Eighty Egyptian diabetic patients and twenty control individuals were tested by VEPs, BAEPs, SEPs, MEPs, EEG, brain MRI, MRI diffusion and MRI spectroscopy (MRS). The patients were classified into subgroups according to type of DM, duration of DM, level of HbA1c and microangiopathy.

Results: There were statistically non-significant differences in EEG changes. SEPs showed a statistically significant increase of mean N9, N13, N22, N9-N13 and N13-N22 interpeak latencies. MEPs showed a statistically significant increase of mean cervical, lumbar, cortical latencies and CMCT. BAEPs showed a statistically significant increase of mean wave I, II, III, IV, V, III-V interpeak, I-V interpeak latencies and I/V amplitude ratio in both ears and mean wave I-III interpeak latency in the left ears. VEPs showed a statistically significant increase of mean P100 latency in both eyes. Brain MRI showed a statistically significant increase of silent ischemic lesions (focal and multiple) in DM type 2 than DM type 1. MRI diffusion showed a statistically significant decrease of parietal and basal ganglia (BG) ADC values. MRS showed a statistically significant increase of mean occipital, parietal and BG NAA/Cr, parietal and basal ganglia Myo/Cr and BG Cho/Cr ratios. There were a statistically significant positive correlation between SEPs, MEPs, BAEPs, VEPs, MRI diffusion and duration of DM; and between BG Cho/Cr ratio and level of HbA1c. We conclude that the central effects of DM are related to duration rather than metabolic control.

2- Silent brain infarctions in diabetes mellitus patients: the multimodal evoked potential tests sensitivity and specificity.

Background: The presence of silent brain infarction (SBI) increases the risk of symptomatic stroke and dementia. The association between SBI and diabetes mellitus has not been clarified. Objectives: To investigate the relationship between multimodals evoked potential tests and SBI in diabetes mellitus patients. Subject and methods: 21 patients type 1 diabetes, 59 patients type 2 and 20 age matched controls, all were subjected to motor nerve conduction studies, right median somatosensory evoked potentials (SEP), left upper and lower limbs motor evoked potentials (MEP), brainstem auditory evoked potential (BAEP), visual evoked potentials (VEP), and MRI brain with exclusion of other possible cases which can cause peripheral or central neuropathies.
Results: SBI was found in 55% of the 80 patients. Age, onset of diabetes, type 2 DM, female gender, the presence of hypertension, retinopathy, coronary heart disease, low creatinine clearance and poor metabolic control were risk factors for SBI in diabetics (P 3-

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