

RESTING STATE QUANTITATIVE EEG SPECTRAL RATIOS PREDICTING COGNITIVE DECLINE IN GREEK PATIENTS WITH DIABETIC POLYNEUROPATHY

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Introduction: Cognitive dysfunction complicates diabetic polyneuropathy. Furthermore some EEG features have been related to cognitive impairment in type 2 diabetes.

Objective: This two-year study, reconsidering the usage of quantitative electroencephalographic (QEEG) variables, a less expensive technique, is investigating the possible association of electroencephalographic (EEG) rhythm ratio alterations with cognitive decline in Greek patients with diabetic polyneuropathy.

Methods: Eighteen middle aged patients (7 male and 11 female) with diabetic polyneuropathy were assessed. A group of healthy subjects, matching in terms of age, number and gender was used as a control. Subjects with depression, cerebrovascular disease or preexisting cognitive disease were excluded. All subjects were evaluated four times annually by the Mini Mental State Examination and the Brief Repeatable Battery of Neuropsychological Tests. Resting state eye-closed EEG signals were recorded. The data was acquired and afterwards processed off-line using Neurofax EEG (NIHON KOHDEN) software.

The different spectral ratios were calculated. Correlation between the participants' variables and QEEG values was estimated.

Results: A noteworthy, statistical significance was found between the delta, theta, beta and gamma ratios and cognition. Patients presenting pathologic alterations mainly in the temporal and less in frontal the areas, developed reduction of global cognitive functioning regarding memory and mood. Severity of polyneuropathy determined the clinical course.

Conclusion: Re-evaluating resting state QEEG in diabetic polyneuropathy, certain alterations of EEG rhythm ratios seem to be a remarkable index of cognitive impairment prediction, which could result in treatment modulation and delay of debilitation.