

EEG CORRELATES OF THE COGNITIVE IMPAIRMENT IN AGED PATIENTS WITH THYROID GLAND DYSFUNCTION

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Purpose: To identify the early EEG features of cognitive impairment progressing to dementia in aged patients with thyreopathies.

Patients and Methods: 200 patients aged 50 to 70 with thyreopathy were investigated. Thyroid gland was evaluated by ultrasound. Thyroid gland hormones (FT-4, TSH) detected biochemically. Cognitive status evaluated by MMSE. Brain electrophysiology studied by 21 channels EEG. Control comprised 50 aged matched healthy persons.

Results: Mild cognitive impairment (MCI) showed 78 persons with hypothyreosis, 32 persons with hyperthyreosis and 17 patients with euthyreoid state. Dementia was detected in 4 patients with hypothyreosis.

MCI patients (5.26%) with hypothyreosis showed the disorganized EEG, 57.8% - desynchronized EEG, 21.05%- disorganized- desynchronized EEG.

MCI patients (62.5 %) with hyperthyreosis revealed the disorganized EEG, 37.5%- desynchronized EEG.

MCI patients (39.47%) with euthyreoid state showed the disorganized EEG, 44.75%- desynchronized EEG.

Dementia patients showed the disorganized- desynchronized EEG.

Patients with thyreopathy without cognitive disturbances revealed the normal EEG in 25.5% and disorganized EEG in 75.5%.

Control showed the normal EEG in 67.6% and the disorganized EEG in 32.4%.

Positive correlation found between the desynchronized EEG and cognitive impairment in patients with thyreopathies ($r=+ 0.41$ $p<0.05$). Multivariate logistic regression revealed the significance of thyroid gland hormone levels for probability of cognitive decline ($p<0.01$).

Differences found in maximal amplitude of α rhythm and frequency ratio of β_2/β_1 rhythms between the patients with thyreopathies and control ($p<0.01$).

Conclusion: Hypothyreosis correlating with desynchronized EEG activity has the more negative impact on cognition and can contribute to the development of dementia.