

Neuropsychological correlates of subclinical hypothyroidism

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Abstract

Introduction: There are conflicting studies about the presence of cognitive dysfunction in patients with subclinical hypothyroidism. It is prudent to identify subclinical cognitive abnormalities if any in patients with subclinical hypothyroidism to recommend/choose levothyroxine therapy.

Aims and Objectives: To study the neuropsychological abnormalities in cases with subclinical hypothyroidism and compare them with euthyroid controls.

Methods: Patients between 18 to 45 years of age, diagnosed with subclinical hypothyroidism with thyroid stimulating hormone (TSH) value between 4.5 to 10 mIU/L with normal T4 values were recruited. Controls were healthy age, gender and education matched. All the cases and controls underwent detailed neuropsychological assessment with a battery of validated tests for use in hypothyroid patients and age groups 18 to 60 years.

Results: Thirty nine patients with a mean age 30.28 ± 7.7 years (female: male ratio 13:1) and 23 controls (female: male ratio 21:2) with mean age 33.4 ± 7.1 years ($P = 0.2$) were enrolled. The mean TSH value in cases was 6.36 ± 1.3 mIU/L and in controls was 2.49 ± 1.03 mIU/L ($P < 0.001$). Patients were clinically screened for any nutritional deficiencies, and Diabetes mellitus was ruled out by HbA1c testing (values less than 6.5%) in both cases and controls.

The visual memory delayed recall which is a function of the right temporal lobe was abnormal in 46.2% (N = 39) cases as compared to 22.7% (N = 5) controls ($P = 0.06$). The category fluency test was abnormal in 35.9% (14) in patients as compared to 13% (n=3) in controls ($p < 0.05$). The word recognition task was abnormal in 28.2% (n=11) as compared to 4.5% (n=1) in controls ($p < 0.05$).

Conclusion: This study shows that patients with subclinical hypothyroidism have word recognition and category fluency deficits suggestive of dysfunction of the prefrontal cortex.