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Cognitive function in patients with type 2 diabetes mellitus: Relationship to stress hormone (Cortisol)

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Abstract

Chronic hyperglycemia and hypercortisolemia have deleterious effect on the hippocampus, brain area responsible for learning and memory. We aimed to determine the relationship between hypercorticolemia and cognitive function with T2DM. Included were 57 patients. Cognition was tested using battery of psychometric testing (Mini-mental State Examination or MMSE, Stanford Binet test (4th edition) or SBST and Wechsler Memory Scale-Revised or WMS-R) and by recording P300 component of event related potential (ERPs). Depression was assessed using Beck Depression Inventory (BDI-II). We also measured cortisol at basal state and after dexamethasone injection. Compared to controls (n=40), patients had lower scores of subsets and total scores of cognitive testing (MMSE, SBST and WMS-R) (P=0.004), abnormalities in P300 and higher depression scores (P=0.001). Comprehension, bead memory, memory for sentences, digit forward, digit backward, mental control, logical memory, total scores of cognitive testing, P300 amplitude and depression scores are markedly affected with poor glycemic control. Patients had high levels HbA1c and cortisol at basal state and after dexamethasone. This relationship was only significant in presence of poor glycemic control after controlling for age, duration of illness and dyslipidemia. We concluded that hypercortisolemia appears to exacerbate cognition dysfunction in T2DM only in presence of poor glycemic control.