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FUNCTIONAL CHANGE OF THE AUDITORY CORTEX RELATED TO BRAIN SEROTONERGIC NEUROTRANSMISSION IN TYPE 1 DIABETIC ADOLESCENTS WITH AND WITHOUT DEPRESSION

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Objective: The aim of this study was to determine whether diabetic patients who were depressed present a decrease of brain serotonergic activity compared to diabetic patients without depression or patients with depression but without diabetes. Determination was made with plasma free fraction of l-tryptophan (FFT) and intensity-dependent auditory-evoked potentials (IDAEPs).

Methods: Thirty seven adolescents were studied (20 type 1 diabetic subjects: 9 with depression, 11 without depression), 9 controls and 8 subjects with only depression. FFT, glucose, glycated hemoglobin, free fatty acids, albumin and IDAEPs were determined.

Result: All diabetic patients showed a significant decrease of FFT. The group diabetic subjects with depression presented a steeper slope of the amplitude-intensity function of N1/P2 component, suggesting a higher reactivity of the auditory cortex in comparison to diabetic subjects without depression, subjects with only depression, and controls. This was associated with lower plasma FFT. Diabetic subjects with depression had a deficiency of metabolic control due to poor treatment adherence.

Conclusions: These findings suggest an enhanced deterioration of brain serotonergic neurotransmission in diabetic subjects with depression with abnormal responses of the auditory cortex. The N1/P2 component of IDAEP is proposed as a noninvasive indicator of brain serotonergic tone that differentiates depressed from nondepressed diabetic patients.