TRYPTOPHAN AND KYNURENINE LEVELS IN THE URINE OF PAEDIATRIC PATIENTS WITH DEPRESSIVE DISORDER

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Abstract:
Depression is one of the neuropsychiatric diseases that are a serious worldwide problem and is increasingly diagnosed in childhood and adolescence. The pathophysiology of depression is associated with disorders in the metabolism of neurotransmitters, especially serotonin. The only known serotonin precursor is tryptophan. Tryptophan is metabolized through the methoxyindole and kynurenine pathways. Inflammatory reactions play an important role in depression. Increased production of pro-inflammatory cytokines leads to the activation of the enzyme indoleamine 2,3-dioxygenase (IDO), which metabolizes tryptophan (TRP) to kynurenine (KYN). The KYO / TRP ratio is used to determine IDO activity. Increased tryptophan metabolism through the kynurenine pathway leads to a lack of tryptophan available for serotonin synthesis. Urine analysis is non-invasive and its collection is simple, what is important in pediatric patients. The goal of this work was to determine the levels of tryptophan, kynurenine and kynurenine/ tryptophan ratio in the urine of paediatric patients with depressive disorder and compare them to the levels in the urine of healthy volunteers. These metabolites were determined by high-performance liquid chromatography (HPLC) with absorption detection at 257 nm (KYN) and fluorescence detection at 280/370 nm (excitation/emission wavelength) (TRP). We found lower tryptophan levels, increase kynurenine levels and higher IDO activity in the urine of pediatric patients with the depressive disorder compared to healthy volunteers.

Key words: tryptophan, kynurenine, HPLC, urine, depressive disorder.

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