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KYNURENINE INVOLVEMENT IN PATHOGENESIS OF HYPERKINETIC CHILDREN SYNDROME

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Objectives: The aim of the study was to evaluate the response of different monoaminergic systems to psychostimulant treatment in children with mild form of hyperkinetic syndrome (HKS).

Methods: The levels of N-methylnicotinamide (end product of kynurenine pathway of tryptophan metabolism), 5-hydroxyindoleacetic (product of serotonin pathway of tryptophan metabolism), homovanillic and vanillylmandelic acids were measured in daily (3 days) urine samples of children (30 patients, 7-11 years old) with mild HKS with normal intellect or borderline mental insufficience. Biochemical measurements were performed before and 3 weeks after sydnocarb medication (5-15 mg sydnocarb daily). (Sydnocarb is a psychostimulant introduced into the clinical practice in the Soviet Union in the 70th of XX century).

Results: After 3 weeks of sydnocarb therapy there were found the improvement of children's clinical status in both groups. It was followed by a significant decrease in the excretion of homovanillic (by 45 %), vanillylmandelic (by 35 %) and 5-hydroxyindoleacetic (by 50 %) acids but by a significant increase in N-methylnicotinamide excretion (by 30%).

Conclusions: Psychostimulant medication has revealed the involvement of kynurenine and serotonin in HKS pathogenetic mechanisms. There were found a reciprocal relationship between serotonergic and kynurenine systems. It is proposed the kynurenine hypothesis of pathogenesis of HKS. It is characterized by the decreased activity of kynurenine system in HKS children. Clinical improvement of HKS children under psychostimulant medication is connected with activation of kynurenine system along with the decrease of serotonergic activity.

https://doi.org/10.1016/S0924-9338(09)71225-8 Published online by Cambridge University Press