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The Role of Magnesium in the Hormonal Changes of Juvenile Dysmenorrhea

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Annotation: One of the main causes of poor quality of life for adolescent girls and adult girls worldwide is pain during menstruation. According to the World Health Organization, menstrual pain syndrome is one of the most common juvenile gynecological diseases, accounting for about 15% of all cases. Juvenile dysmenorrhea - painful menstruation is a gynecological pain in girls under 18 years of age, regardless of ethnicity or age, when no pathology is detected in the pelvic area. Despite the prevalence of primary dysmenorrhea, it is not well diagnosed in girls, and is sometimes even denied by health workers by the girls themselves or their mothers, meaning that painful menstruation is considered an integral part of physiological menstruation.
The presence of a pathological condition in the body of a teenage girl is due to the presence of pathological processes in these tissues and organs. These provide a deeper understanding of the pathogenesis of juvenile dymenorrhea and a new therapeutic and prophylactic approach to the treatment of painful menstruation in girls.

Keywords: Magnesium, health, juvenile dysmenorrhea, women.

Introduction

Examination of girls with juvenile dysmenorrhea to identify CTD criteria was carried out according to the following parameters: 1) a clinical interview, during which the general state of health, heredity, allergoanamnesis, previous diseases were clarified. 2) Phenotypic signs and severity of CTD were assessed using a diagnostic table

As can be seen from the presented material, the magnesium content in the blood in the group of girls with JD without the manifestation of CTD only tended to decrease, amounting to 1,061± 0.023; 0.913± 0.032 and 0.902± 0.031 mmol/l, respectively, the severity of dysmenorrhea – mild, moderate and severe, with the value of this indicator in the group of practically healthy girls 1,077± 0.003 mmol/l. In the group of girls with mild JD and with the presence of manifestations of CTD, the content of magnesium in the blood serum was 0.712±0.039 mmol/l, which was significantly lower at 1.49 ($P<0.032$) and 1.51 ($P<0.032$) times more than in the group of girls with JD without CTD and practically healthy, respectively. In the group of girls with moderate JD and with the presence of CTD, the magnesium content in the blood serum was 0.621±0.027 mmol/l, which was significantly lower by 1.47 ($P<0.032$) and 1.73 ($P<0.032$) times than in the group of girls with JD without CTD and practically healthy, In the group of girls with severe JD with signs of CTD, a more pronounced decrease in serum magnesium content was found: a decrease to 0.517±0.026 mmol/l, which was significantly lower by 1.74 ($P<0.032$) and 2.08 ($P<0.032$) times than in the group of girls with JD without CTD and practically healthy, respectively. Correlation analysis showed a strong inverse correlation between the content of free oxyproline and magnesium content ($r=-0.89\pm0.2$, $p<0.01$) and a strong inverse correlation between the severity of dysmenorrhea and magnesium content ($r=-0.98\pm0.1$, $p<0.01$).

Consequently, girls suffering from primary dysmenorrhea of varying degrees and having signs of CTD had hypomagnesemia, which was dependent on the severity of dysmenorrhea and the presence of CTD. The stydy of the relationship between the content of free oxyproline in daily urine and the level of magnesium in blood serum showed a noticeable increase in the excretion of free oxyproline, against the background of a significant decrease in the content of magnesium in blood serum. This indicated an increased breakdown of collagen, which is an integral part of the connective tissue covering the pelvic organs and part of the ligamentous apparatus of the uterus. It is believed that magnesium indirectly affects

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the synthesis of collagen through its effect on the higher vegetative center – the hypothalamus and participates in the synthesis of a number of neuropeptides of the brain. To date, magnesium deficiency occupies a leading position among the pathology of the elemental status, and according to ICD-10, the diagnosis of "Magnesium deficiency" is encoded as E61.2.

A large number of stydies have been devoted to the problem of magnesium deficiency, according to researchers from Italy, it can play an important role in several clinical conditions concerning women's health, where dysmenorrhea is indicated [20]. The lack of magnesium and pyridoxine leads to hypertension and vascular spasm or prolonged vasodilation and venous stagnation, which leads to a change in the hemodynamics of the pelvis, which is caused by an increase in the concentration of prostaglandins in the body. This, in turn, contributes to cell hypoxia, the accumulation of algogenic substances with irritation of nerve endings and the occurrence of pain in the lower abdomen. With a lack of magnesium, a violation of the formation of connective tissue in the form of its undifferentiated dysplasia was often noted. The condition of chronic stress in adolescents leads to significant losses of magnesium in the urine, while absorption in the gastrointestinal tract is significantly reduced, which ultimately leads to a violation of collagen production in connective tissue.

Thus, based on the above, it can be assumed that primary dysmenorrhea can indeed be attributed to a number of manifestations of connective tissue dysmorphic disorder, which is often the result of magnesium deficiency, most often of an innate nature. The presence of CTD criteria in girls with JD suggests the prescription of the process of destruction of collagen fibers and disorders of collagen formation associated with magnesium deficiency since the formation and functioning of the reproductive system of the female body.

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