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THE FREQUENCY AND DEGREE OF VITAMIN D DEFICIENCY IN YOUNG CHILDREN WITH COMMUNITY-ACQUIRED PNEUMONIA AND METHODS FOR THEIR CORRECTION

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Annotation: The article presents the results of a study of the provision of vitamin D to young children from the medical and social risk group - with perinatal CNS damage (including cerebral palsy), from mothers suffering from alcoholism and using psychotropic drugs, who had bronchitis and community-acquired pneumonia two or more times a year, as well as children with signs of rickets. A low supply of vitamin D to children from medical and social risk groups has been established. Without prophylactic administration of vitamin D preparations, the risk of developing vitamin D deficiency (less than 4 ng/ml) increases by almost 5 times ($p<0.05$) and vitamin D deficiency variants (5–20 ng/ml) by 6 times ($p <0.01$).
Keywords: Children, early age, vitamin D, cholecalciferol.

INTRODUCTION

At present, increased attention on the part of pediatricians and other specialists to the provision of children with vitamin D is quite justified, since it has been established that it has the ability not only to form and maintain the health of the skeletal system, but also to perform other important extra-osseous effects in the human body. [1, 2, 3].

MATERIALS AND METHODS

Recent studies indicate that it is necessary to maintain a sufficient level of serum vitamin D, not only to maintain normal bone mineralization, but also for the correct functioning of the child's immune system, in particular, the prevention of respiratory, autoimmune and allergic diseases that violate the social child adaptation.

RESULTS AND DISCUSSION

It is known that vitamin D enters the human body with food and by synthesis in the skin under the influence of ultraviolet rays. It should be noted that foods containing vitamin D are few and far between. Fatty fish is the richest source of vitamin D; a small amount of vitamin D is present in mushrooms, beef liver, egg yolks, milk, butter, and cheese [3]. It must be remembered that a person has a number of factors that significantly reduce ultraviolet exposure [4]. These include indoor windows, sunscreens, the degree of skin pigmentation, total cloudiness, air pollution levels, and geographic latitude. In particular, in the zone near 55° north latitude (the cities of Moscow, Nizhny Novgorod, Kazan, etc.), the formation of vitamin D in the skin under the action of solar radiation is possible only from mid-April to mid-August.

We examined 113 children aged 2 months to 3 years from the groups of medical and social risk living in the city of Kazan. All children were divided into groups:

• the first group consisted of 41 children with perinatal lesions of the central nervous system (CNS) in the form of diffuse muscular hypotension and hypertensive-hydrocephalic syndrome;

• the second — 5 children with cerebral palsy (ICP),

• the third - 34 from mothers suffering from alcoholism and using psychotropic drugs;

• fourth — 18 children who had bronchitis and community-acquired pneumonia two or more times a year at an early age,

• the fifth group included 15 children with rickets.

All examined children were assessed anamnestic data, carried out a clinical examination with the participation, if necessary, narrow specialists. The analysis of laboratory parameters included the determination of the level of total calcium, inorganic phosphorus, alkaline

phosphatase in the blood serum and the content of the vitamin D metabolite calcidiol (25(OH)D3) in the blood serum within the framework of the Andijan scientific and practical program by the method of competitive chemiluminescent immunoassay (CLIA), performed in the laboratory of the scientific center in Andijan. The results of vitamin D sufficiency were assessed in accordance with the recommendations of the International Society of Endocrinologists (2011): deficiency — 25(OH)D level less than 20 ng/ml; insufficiency - 21-29 ng / ml; the normal content is 30–100 ng/ml, the level of more than 100 ng/ml was regarded as an excess of vitamin D [2].

Peculiarities of maternal and infant history were revealed in the majority of patients from medico-social risk groups. Thus, an analysis of the obstetric anamnesis showed that all mothers of the fourth and fifth groups (19.5%) regularly attended the antenatal clinic, 53.1% of the mothers of the first two groups during pregnancy were only occasionally observed in the antenatal clinic, 22 .1% of mothers of the third group during pregnancy never turned to a gynecologist at the prenatal stage, and 5.3% had no information.

It is known that spontaneous termination of previous pregnancies adversely affects the intrauterine development of the fetus, being a risk factor for its possible infection. Thus, in the history of 20% of mothers of the first three groups, cases of interrupted previous pregnancies without an established reason were established, the threat of termination of a real pregnancy was established in 16.81%. In 41.6% of mothers of the first, fourth and fifth groups, the pregravid period was not burdened.

An analysis of past diseases during pregnancy in all groups of women revealed that the vast majority of mothers had them, and ARVI was observed in 36.28% in the first half of pregnancy. In the third group, 7.1% of mothers were infected with the causative agent of chronic hepatitis, and treated syphilis before the onset and during pregnancy was confirmed in 2.65%. The development of anemia in pregnant women (34.5%) and fetoplacental insufficiency in the first half of pregnancy (23.9%) were also detected, and no significant differences in these parameters between the groups were found.

The reason for inadequate provision of expectant mothers with both calcium and vitamin D could be unfavorable socioeconomic living conditions during pregnancy, observed in 45.1±5.7% of women of all groups. The intake of vitamin-mineral complexes in a daily dose of vitamin D 400–500 IU and calcium 125–200 mg during pregnancy was observed only in 44.2% of mothers, and almost all mothers of the third group did not take any drugs during pregnancy. Thus, in more than a third of cases, a pathological course of a real pregnancy was noted in the absence of adequate prenatal prevention of an osteopenic condition in a child.

CONCLUSION

Thus, in children from medical and social risk groups, in the absence of adequate insolation and its insufficient intake with food at early stages of development, additional administration of cholecalciferol is very important for the prevention and correction of vitamin D insufficiency and deficiency.

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