PECULIARITIES OF PHOSPHORUS AND CALCIUM METABOLISM AND VITAMIN D LEVELS DURING THE FIRST YEAR OF LIFE IN CHILDREN WITH HIGH BIRTH WEIGHT

Introduction. The dynamics of physical and neuropsychiatric development as well as the health in the first year of life of children with a high birth weight is insufficiently studied. An open question remains regarding the peculiarities of phosphorus-calcium metabolism and the level of vitamin D in this group of children. Therefore, research of this subject is relevant and contributes to the health improvement of children with high birth weight.

The purpose of the work was to study the parameters of phosphorus and calcium metabolism, bone metabolism and vitamin D levels in the first year of life of children with high birth weight.

Results of the research and their discussion. Among clinical manifestations of the deviations in phosphorus and calcium metabolism in the first year of life of children with high birth weight were an increased frequency of neuro-reflex excitability (80.0 ± 2.3%) and of muscle hypotension (20.0 ± 7.3%) compared to children with normal birth weight. Children in this group are more likely to have acute respiratory infections than children with normal birth weight. It has been found that for children with birth weight ≥4000 g vitamin D deficiency was characteristic regardless of the season. There is a reliable, reverse, moderate relationship (r -0.503; p <0.001) between birth weight and serum levels of 25(OH)D.

A reliable, direct, strong relationship between phosphorus and calcium content and 25(OH)D level is proved as well as a reliable, reverse, strong relationship between alkaline phosphatase activity and blood serum level of 25(OH)D in children with high birth weight.

The criterion of vitamin D deficiency in the first year of life of children with a high birth weight can be a decrease in the content of circulating 25(OH)D to less than 19.11 ± 2.92 ng/ml.

The content of serum osteocalcin in children with high birth weight was significantly lower (56.15 ± 4.02 ng/ml) than in children with normal birth weight (94.26 ± 2.96 ng/ml). The lowest serum osteocalcin levels were in children of this group with the signs of rickets, indicating abnormal bone metabolism.

Conclusions. Thus, the results of the studies have shown that in children with a high birth weight the 25(OH)D deficiency supersedes its insufficiency. In addition, the content of osteocalcin in blood demonstrates that children with a high birth weight show signs of bone metabolism disorder, which may lead to severe consequences in the future.