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ІМЕНІ В.Н. КАРАЗИНА  
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ТА ПІДЛІТКІВ НАМН УКРАЇНИ»

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## **ПРОБЛЕМИ СЬОГОДЕННЯ В ПЕДІАТРІЇ**

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## PREDICTORS OF THE DEVELOPMENT OF ACUTE PNEUMONIA IN CHILDREN OF EARLY AGE

*Krainia Hanna*

Zaporizhzhia State Medical University, Zaporizhzhia  
The department of Hospital Pediatrics

**The purpose:** to determine the risk factors of acute pneumonia in children of early age.

**Materials and methods of research.** Under observation were 42 children with acute pneumonia (average age  $1.3 \pm 0.2$  years). The data on the course were analyzed of the perinatal period, the sex of the child, the nature of feeding in the first year of life, and the history of the disease. The Vitamin D and antimicrobial peptides (lactoferrin, LL37) were determined in the blood serum by enzyme immunoassay using commercial OSTEIA 25-Hydroxy Vitamin D kits (ELISA Kit, Germany), Human Lactoferrin (Hyculbiotech, Netherlands) and LL37 (Human ELISA, Germany) respectively. Statistical data processing was performed using Statistic for Windows 13.0. The effect of factors on the development of the disease was assessed by calculating the risk ratio (RR-related risk) with the determination of 95% confidence intervals (95% CI). To assess the relationships between the indicators, the Spearman rank correlation method ( $r$ ) was used.

**Results of a research.** By results of a research was determined that the main risk factors for the development of acute pneumonia in children of early age were hospitalization for a period of more than 3 days (RR 2.63, 95% CI 1.06 - 6.52), the late start of antibacterial therapy (RR 2.83, 95% CI 1.15 - 6.98), birth weight < 2500g (RR 1.84, 95% CI 1.16 - 2.93), artificial feeding in the first year of life (RR 1.64, 95% CI 1.07 - 2.5), a decrease in blood serum vitamin D (RR 2.84, 95% CI 1.16 - 3.93), lactoferrin (RR 3.98, 95% CI 2.35 - 6.75) and cathelicidin (RR 2.52, 95% CI 1.02 - 6.29). The correlation analysis revealed an interdependence between the indicated factors. The significant correlation was established between the vitamin D content in blood serum and the level of lactoferrin ( $r = 0.44$ ,  $p < 0.05$ ) and cathelicidin ( $r = 0.47$ ,  $p < 0.05$ ).

**Conclusion.** Thus, the analysis of the anamnestic data of life and disease, as well as indicators of the content of antimicrobial peptides in the blood serum of children of early age made it possible to identify the most significant predictors of the risk of developing acute pneumonia. The effect on modified factors will prevent the development of the disease and increase the effectiveness of therapeutic measures for this children.

## THE ROLE OF VITAMIN D IN THE DEVELOPMENT OF ANEMIA OF INFLAMMATION IN YOUNG CHILDREN WITH ACUTE INFLAMMATORY BACTERIAL DISEASES OF THE RESPIRATORY SYSTEM

*Pohribna A.O.*

Zaporizhzhia State Medical University  
Hospital pediatrics department

In the last decade, the concept of the polymodal function of vitamin D in the children's body has expanded significantly. In particular, it became known about the effect of vitamin D on the synthesis of the antimicrobial peptide hepcidin, a marker of iron metabolism, which implements a protective function by reducing the bioavailability of iron, necessary for the growth of bacterial pathogens. We can assume an interconnection between vitamin D content in the blood serum and the risk of anemia of inflammation, the leading mechanism of which includes the induction of hepcidin by pro-inflammatory cytokines.

**Aim of study.** To assess the role of vitamin D in the development of anemia of inflammation in young children with acute inflammatory bacterial diseases of the respiratory system.

**Materials and methods.** Studying included 60 young children. The average age was  $1.3 \pm 0.2$  years. The main group included children with acute inflammatory bacterial diseases. Given the hematological pictures, patients shared to subgroups: the first subgroup included 15 children with anemia of inflammation, the second subgroup included 15 children without manifestations of anemia. The comparison group included 10 children with iron deficiency anemia without inflammatory background. The control group included 20 conditionally healthy children. The microbial spectrum of biological materials with mucous membranes of the oropharynx was studied from bacteriological analysis by VITEK 2 COMPACT (VioMerio, France) carried out before the appointment of antibacterial therapy. The determination of serum vitamin D and hepcidin levels in young children was determined using commercial kits: DIASource 25OH Vitamin D Total ELISA Kit (Belgium), Human Hpc (Hepcidin) ELISA Kit (Elabscience, USA). Statistical data processing was carried out using the Statistica 13.0 licensed package. The correlation coefficient was used Spearman's rank correlation coefficient. When evaluating different indicators in the compared groups, Student t-test was used. Differences were considered significant at  $p < 0.05$ .

**Results.** An analysis of the data showed that the development of anemia of inflammation occurred against the background of a decrease in the level of vitamin D in the blood serum of children who were under observation in the comparison group and the control group ( $p < 0.01$ ). In the comparison group were no significant differences found. The vitamin D content in the group of children with acute bacterial inflammatory diseases without anemia of inflammation did not differ from its level in the group of children with iron deficiency anemia, but the control group is significantly lower by 1.5 times ( $p < 0.05$ ). Taking into account the data of modern literature about the key role of hepcidin in the development of anemia of inflammation and the inverse correlation between the level of vitamin D and hepcidin ( $\rho = -0.8$ ,  $p < 0.05$ ) in the blood serum, we can assume that the low content of vitamin D is also increases the likelihood of developing anemia in young children, in patients with acute inflammatory bacterial diseases of the respiratory system.

**Conclusions.** The results of the study showed the pathogenetic role of vitamin D deficiency in the development of anemia of inflammation.

## CHANGES OF BLOOD PRESSURE CIRCADIAN RHYTHM IN PATIENTS WITH DIABETES DEPENDING ON BODY MASS

*Kateryna Samoylyk*

Zaporizhzhia State Medical University

Department of Hospital Pediatrics

**Introduction.** Type 1 diabetes is associated with higher cardiovascular morbidity and mortality, and arterial hypertension is one of the risk factors leading to an increase in the incidence of vascular events in patients with diabetes. Because excessive weight is associated with an increased risk of cardiovascular disease in young people without diabetes, overweight in adolescents with diabetes can increase the risk of developing cardiometabolic complications, namely, hypertension.

**Objective:** to determine the characteristics of blood pressure (BP) parameters in children with normal body mass and overweight or obese patients with diabetes.

**Methods:** The study included 53 adolescent children suffering from insulin-dependent diabetes mellitus without signs of acute complications. There were 37 boys and 16 girls with an