

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ  
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»**



## **МАТЕРІАЛИ**

**104-ї підсумкової науково-практичної конференції  
з міжнародною участю  
професорсько-викладацького персоналу  
БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ  
06, 08, 13 лютого 2023 року**

Конференція внесена до Реєстру заходів безперервного професійного розвитку,  
які проводитимуться у 2023 році №5500074

**Чернівці – 2023**

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**PECULIARITIES OF CALCIUM HOMEOSTASIS REGULATION IN SCHOOLCHILDREN SUFFERING FROM BRONCHIAL ASTHMA CONSIDERING BASIC THERAPY WITH INHALATION GLUCOCORTICOIDS**

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**Introduction.** Contrary to the developed scientifically substantiated recommendations and instructions on treatment and prevention of bronchial asthma (BA), availability of basic therapeutic agents and means for inhalations, the control over bronchial asthma in children remains far from being perfect. Thus, glucocorticoids (GC) are known to produce a negative effect on the function and survival of osteoblasts and osteocytes, and in case osteoclasts survive GCs cause metabolic disorders in bones.

**The aim of the study:** to examine the course of BA in schoolchildren considering a daily dose of inhalation glucocorticoids on the base of the peculiarities of calcium metabolism regulation by the content of parathyroid hormone in the serum.

**Materials and methods.** The children of a school age suffering from persisting bronchial asthma (pBA) depending on the content of parathyroid hormone in the serum were distributed into two groups of comparison. The first (I) group included 30 patients with the level of parathyroid hormone in the blood serum higher than 10,0 pg/ml (normal values according to the producer's data are 10,4-66,5 pg/ml), and the second one (II) – 35 children suffering from pBA with lower values of the parathyroid glands function. The groups were comparable by the main clinical signs. Thus, an average age of the I group representatives was 10,54±0,52 years, and the II group – 10,28±0,6 years. At the same time, duration of the disease was 4,76±0,78 and 3,81±0,57 years respectively (Pt>0,05).

**Results.** In our study we have not found natural changes of the parathyroid hormone content in the blood serum in patients depending on doses of GCs except the range of high doses. With low content of parathyroid hormone in the blood serum children received therapy with low and middle doses of GCs reliably more often: odds ratio = 3,6 (95% CI 1,9 - 6,6), RR = 2,0 (95% CI 1,6 - 2,5), AR = 0,31. High doses are likely to promote the development of osteoporosis to some extent and calcium washing out from the bones, which in its turn stimulates parathyroid hormone synthesis. Contrary to that, we have not obtained statistically reliable differences in the content of serum calcium in patients from the clinical group of comparison. Thus, in children with the content of parathyroid hormone >10,0 pg/ml calcium content was 2,39±0,01 mmol/L (the minimal value is 2,28, the maximum value is 2,44 mmol/L). Among the representatives from the II group these parameters were 2,38±0,008 mmol/L (minimal – 2,32, and maximum – 2,42 mmol/L) (Pt>0,05). Control over BA did not affect the level of calcium in the blood serum: in patients with controlled pBA calcium of the blood serum was on an average 2,38±0,04 mmol/L, and in case of uncontrolled course of the disease – 2,41±0,01 mmol/L (Pt>0,05). Moreover, in patients with low function of the parathyroid glands and lower content of parathyroid hormone in the blood serum bronchial permeability disturbances are more marked during the period of clinical well-being than in their peers with preserved functional ability of the parathyroid glands: odds ratio = 5,4 (95% CI 2,0 - 14,4), RR = 1,8 (95% CI 0,7 - 4,5), AR = 0,37.

**Conclusions.** Thus, in spite of differences in severity and doses of inhalation GCs, pBA in children of clinical groups was controlled with the same effect. Statistically valuable correlations are found between the content of parathyroid hormone in the blood serum and duration of use of systemic GCs during BA attacks (R=0,72), which emphasizes the effect of these drugs on phosphorus-calcium metabolism associated with osteoporosis and stimulation of parathyroid hormone release. In our opinion, the tactics of the basic treatment should be reviewed from “step up” position in patients with reduced content of parathyroid hormone in the blood serum.