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DIAGNOSTIC VALUE OF CLUSTER ANALYSIS IN PREDICTING OF AIRWAY REMODELING IN SCHOOL-AGE CHILDREN WITH BRONCHIAL ASTHMA

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In recent years, the scientific literature accumulated results of the study of the key features of asthma in childhood, including atopic markers of airway hyperresponsiveness to the direct and indirect bronchial spasmogenic factors and the character and activity of the local inflammatory process of the airways.

The aim of research is to select high-risk groups on forming the bronchi remodeling to improve the management of asthma in children.

117 school-age children with bronchial asthma (BA) were examined at the Pulmoallergologic Department of the Municipal Medical Establishment "Regional Pediatric Clinical Hospital" in the town of Chernivtsi. The average age of children was $11,5 \pm 0,29$ years, duration of the disease was on average $5,4 \pm 0,33$ years, the boys were 65.25%. We have conducted genetic, allergological, spiographic, biochemical and immunological examination of blood serum, the supernatant liquid of sputum and the condensate of expired air.

3 cluster groups of children with asthma have been revealed. The first (I) cluster that determines a moderate risk of bronchial remodeling have formed boys with early onset asthma, conventionally controlled of its flow, low index of bronchoconstriction (3.1%), moderate bronchodilatation (17.3%), high- proteolytic activity of lysis of azocasein in expired air (1.47 ml / h), high levels of interferon- γ (71,7 pg / ml) and interleukin-6 (4.27 pg / ml) in the supernatant liquid of sputum. In the second (II) cluster, which is associated with a high risk of remodeling, have entered girls with severe uncontrolled asthma and later its debut, absence of deletion polymorphism of genes *GSTM1*, *GSTT1*, high index of bronchoconstriction FEV₁ (47.7%), eosinophilia in sputum (20.0 %), high proteolytic activity of lysis of azoalbumin in exhaled breath condensate (1.64 ml / h) elevated concentration of vasoendothelial growth factor (VEGF) – 400,0 pg / ml and interleukin-13 (IL-13) – 90.0 pg / ml in the supernatant fluid of sputum. The third (III) cluster with low probability of irreversible changes of airways have formed children of different sex and debut of asthma, high level of nitrogen oxide metabolites (63.9 mmol / L) and substantial activity for proteolytic activity of lysis of azokol (0.24 ml / h) in exhaled breath condensate, deletion polymorphism of gene *GSTT1*, the tendency to high results of reversibility testing with salbutamol (26.5%), elevated concentration of matrix metalloproteinase 9 (MMP-9) – 6.9 pg / ml and tumor necrosis factor alpha (TNF- α) – 1,0 m / ml in the supernatant fluid of sputum.

In spite of the detected cluster groups of school-age children with asthma, for verification of the diagnosis it is recommended comprehensive examination to determine the risk of airway remodeling and further tactics of the basic anti-inflammatory treatment.

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ASPECTS OF DIAGNOSING CONGENITAL LARGE INTESTINE PATHOLOGY

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Diseases of the large intestine (LI) occupy a significant place in the structure of chronic diseases of the digestive system. Along with functional pathology and inflammatory diseases, conditions caused by developmental abnormalities and the position of the LI cause concern, among which the most frequent one is dolichosigmoid (45-50%) that indirectly creates the basis for the development of chronic inflammatory and functional diseases not only of the LI, but of the entire digestive system.

We examined 109 children with chronic constipation (CC) against the background of dolichosigmoid, who were taking in-patient treatment at pediatric surgery and gastroenterology departments, alongside 40 generally healthy children. Congenital elongation of the sigmoid colon



(CESC) was diagnosed based on irrigographic examination, which was conducted for all children at admission in order to study anatomical and physiological condition of the LI.

Microbiological examination of faeces in all children with CC against the background of CESC showed that LI dysbiosis was characteristic of those patients. Thus, we were able to diagnose the normal composition of the LI microflora in only 5.5% children, however it should be noted that these patients had CESC with the compensated and subcompensated stages of CC. Microbial composition disorder was found in the remaining patients - 94.5 %, including all the children with the decompensated CC 100.0%. pH value of the LI environment is one of the main values in a coprological examination of faeces. The analysis of the pH value of coprofiltrates in children with CESC showed a significant shift in the alkaline direction (7.78) as compared to the values of children in the control group (6.21). Faeces pH values of children from groups with the compensated, subcompensated, and decompensated stages of CC were significantly different from those of the control group ($p < 0.05$). However, it should be noted that the average pH of faeces in children with the compensated stage was close to that of the control group ($p > 0.05$). In the course of correlation analysis, it was revealed that the sIg A value largely depends on the level of indigenous flora. We have not found any correlation dependence on other microorganisms in our research. A decrease in bifidobacteria and lactobacteria causes the deficiency of secretory Ig A, which in turn causes an increase in the permeability of the epithelial barrier of the intestine, trophicity impairment of the LI wall tissues, significant changes in tissue immunity, and launches the inflammatory process in the LI, which is one of the most significant risk factors for the development of CC decompensation against the background of CESC and the occurrence of complications. The revealed correlation relationship allowed assuming that the level of secretory immunoglobulin A in coprofiltrates of children can be indicative of dysbiotic changes in the bowels, i.e. this indicator may be an additional marker of dysbacteriosis and CC decompensation. Therefore, finding stool pH and sIg A values in coprofiltrates using a non-invasive method of diagnosis makes it possible to assess the condition of tissue immunity and microbiocenosis of the bowels, and trace transformation of the compensated stage into the sub- and decompensated stages, which allows identifying the risk group as to the development of adverse effects of dolichosigmoid, taking measures to prevent the progression of the pathological process and the development of complications. These indicators can be used as additional diagnostic criteria with a detailed algorithm intended for doctors of different specialties to be subsequently developed for differential diagnostics of CC in children.

Thus, chronic constipation in children against the background of CESC, is accompanied by changes in the microbiocenosis of the large intestine lumen and tissue immunity, reflecting the stages in 94.5%. Children with CESC show a decrease in sIg A levels in coprofiltrates by 1.3 times as compared to the generally healthy children, which indicates the deficiency of mucosal immunity and contributes to the persistence and development of dysbiotic disorders in the bowels, progression of decompensation, and is directly and closely connected with the severity of constipation in children with CESC.

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FLAP-PLASTIC ON THE NUTRITION BRANCH FOR THE TREATMENT OF PILONIDAL SINUS IN CHILDREN

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Treatment of the pilonidal sinus in the practice of a pediatric surgeon is a difficult issue, because this pathology affects a large volume of soft tissues. This leads to the formation of significant diastase between the edges of the wound. Surgical treatment is accompanied by a high frequency of complications. The recurrence rate is up to 50%. Such results cannot satisfy surgeons. Finding the optimal solution to this problem is relevant.

The possibilities of flap-plastic for the treatment of the pilonidal sinus in children are compared.