

ФУНКЦИОНАЛЬНЫЕ ОСОБЕННОСТИ ПЕЧЕНИ ПРИ РЕСПИРАТОРНЫХ АЛЛЕРГОЗАХ

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Резюме: В статье изложены результаты научной работы по изучению биохимических маркеров поражения печени при респираторных аллергиях. Установлено, при респираторных аллергиях у детей отмечается повышение маркеров повреждения печени без морфологических её изменений. Выявлены свойственные повышение концентрации печеночных ферментов: АЛТ, АСТ, щелочной фосфатазы, гаммаглутаминтранспептидазы, а также IL-4, IL-17A в зависимости от вида аллергенов.

Ключевые слова: биохимические маркеры печени, респираторные аллергии, цитокины.

РЕСПИРАТОР АЛЛЕРГОЗЛАРДА ЖИГАР ЗАРАРЛАНИШИНИНГ БИОКИМИЁВИЙ МАРКЕРЛАРИ

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Аннотация: Ушбу мақолада респиратор аллергияларда жигар зарарланишининг асосий биокимёвий кўрсаткичларини ўрганиш натижалари келтирилган. Тадқиқот натижаларида жигарнинг зарарланиши унинг морфологик ўзгаришисиз кечиши аниқланган. Биокимёвий таҳлилларда АЛТ, АСТ, ишқорий фосфатаза, гамма-глутаминтранспептидаза, ҳамда IL-4, IL-17A микдорининг аллергия турига қараб ошиши исботланган.

Калит сўзлар: жигарнинг биокимивий маркери, респиратор аллергиялар, цитокинлар.

BIOCHEMICAL MARKERS OF LIVER DAMAGE IN RESPIRATORY ALLERGIES

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Summary: The article presents the results of scientific work on the study of biochemical markers of liver damage in respiratory allergoses. It has been established that with respiratory allergies in children there is an increase in markers of liver damage without morphological changes. A characteristic increase in the concentration of liver enzymes was revealed: ALT, AST, alkaline phosphatase, gammaglutamine transpeptidase, as well as IL-4, IL-17A, depending on the type of allergens.

Key words: biochemical markers of the liver, respiratory allergies, cytokines.

Relevance: Respiratory allergoses are a group of respiratory diseases that include lesions of the nose and paranasal sinuses, larynx, trachea, bronchi and lungs. Allergic immunological mechanisms are involved in the development of diseases. The immunological conflict depends on the action of the allergen of the immune response of the body, determined by genetic factors, hormonal influence [5]. Allergens are substances that carry signs of genetically alien information and cause specific immune reactions. Allergens can be complete and incomplete (haptens), as well as have an infectious or non-infectious nature[1]. The main route of entry of allergens into the body is inhalation. The main inhalation allergen is house dust. Scientific studies have proven the presence of microscopic mites of the genus *Dermatophagoides* in it[3,5]. In children, respiratory allergies are caused during the flowering period, animal hair, mold, fungus, etc. are of great importance. The realization of the immunological conflict and its nature depends on the allergenic effect and the immune response of the body, determined by genetic factors, hormonal influence [6,9]

In recent years, a number of domestic and foreign publications have addressed various aspects of the pathogenesis of respiratory allergoses and studied the cytokine profile. It has been proven that an imbalance of cytokines leads to a pronounced inflammatory process of the respiratory tract in children [5,8]. An extremely important function of cytokines is the regulation of inflammation. Several subgroups are distinguished in the group of proinflammatory cytokines:

- cytokines with chemotactic activity and activating inflammatory cells;
- cytokines that have a detrimental effect on altered cells, enhancing the proliferation and differentiation of inflammatory cells;
- cytokines that have a detrimental effect on altered cells, enhancing the proliferation and differentiation of inflammatory cells and their release into the blood;
- cytokines that suppress the function of cells involved in inflammation, and thereby inhibit the development of inflammatory processes.

Violation of indicators associated with the activity of phagocytosis, lysozyme, immunoglobulins, as well as subpopulations of lymphocytes, indicates pathological reactions in the processes of nonspecific protection of the body, a decrease in local and systemic immunity, which also determines the severity of the course and determines the use of additional methods of correction of this pathology in children. Pronounced changes in cytokine profile indicators dictate the need to include methods of immune correction and evaluation of the effectiveness of the treatment in the scheme of complex therapy [2,5,8].

Respiratory allergies remain one of the most common allergic diseases in childhood. In order to develop adequate therapy methods, it is necessary to continue a detailed study of the pathogenesis, including the cytokine system.

The aim of the study was to study changes in biochemical markers and morphometric parameters of liver damage in respiratory allergoses.

Materials and methods. The study was conducted on the basis of the Department of Allergology and Gastroenterology of the Bukhara Regional Multidisciplinary Medical Center. 60 children aged 4-10 years were examined, which are divided into 3 subgroups. 20 children with bronchial asthma were selected in the first subgroup, and 20 children with respiratory allergies (allergic rhinitis, sinusitis, allergic tracheitis, bronchitis) in the second. The control group 3 consisted of 20 healthy children.

All children underwent general and biochemical blood tests (ALT, AST, total bilirubin, alkaline phosphatase (alkaline phosphatase), gamma-glutamyltranspeptidase (GGT), IL-4, IL-17A and liver ultrasound).

The results and their discussion. The study of hepatic transaminases in respiratory allergies allowed to establish an increase in ALT and AST in group 2 patients to 44.42 ± 5.9 u/l and 56.1 ± 11.9 u/l, against the control -25.97 ± 4.15 u/l and 22.69 ± 3.0 u/l, respectively ($p < 0.005$). At the same time, a statistically significant increase in the level of AST in group 2 patients was also found to be 2.23 times higher than in group 1 patients. Consequently, in RA, there is an increase in ALT by 1.5 times, AST by 2.23 times, than in BA. This indicates the involvement of the liver in the pathological process. The mechanism of allergy development depends on the state of liver function, which can be disrupted as a result of taking medications in the treatment of the underlying disease, as well as allergens contribute to liver damage.

Alkaline phosphatase is a protein enzyme involved in the metabolic reactions of phosphoric acid. It is the alkaline phosphatase that helps to detach phosphate molecules from proteins, nucleotides and other molecules. The increased activity of alkaline phosphatase manifests itself in pH from 8.6 to 10 (alkaline medium). The highest content of the substance is found in young cells of bone and liver tissue, as well as in the human intestinal mucosa and placenta.

In children, alkaline phosphatase is more active than in adults. Because they are characterized by active bone growth, which contains the enzyme. During the study, an increase in the level of alkaline phosphatase was found to be 2.25 times in patients with BA and 3.5 times in RA, the latter higher than in children of the control group and with BA, $p < 0.05$.

Consequently, the results obtained show the development of systemic inflammation in allergies involving the liver. Therefore, the clinical picture of respiratory allergies very often shows symptoms of liver damage, which served as the basis for this scientific study.

Gamma-glutamyltranspeptidase is an enzyme involved in the metabolism of amino acids. It is found in the highest concentration in the kidneys, liver, pancreas, and is present in smaller amounts in other tissues of the body. The highest level of GGT is found in renal tissue, the enzyme present in serum comes mainly from the hepatobiliary system. An increased concentration of GGT in the blood serum is most often a marker of impaired bile outflow (cholestasis), as well as drug intoxication. The determination

of GGT makes it possible to solve various problems of differential diagnosis, given the high sensitivity to pathology of the hepatobiliary system.

The results of the analysis showed an increase in the level of GGT in patients of group 1 by 5.0 times, in patients of group 2 by 5.73 times compared to the control - 12.54 ± 3.75 u/l, $p < 0.05$. This indicates liver damage in patients with respiratory allergies, regardless of the clinical form of manifestation, and shows the importance of taking into account the condition of the liver when drawing up a treatment and rehabilitation plan for patients in this category. And also, it is important to carefully study the anamnesis of life and illness of children with respiratory allergies in order to make a correct diagnosis and take into account the causal factors of allergy development.

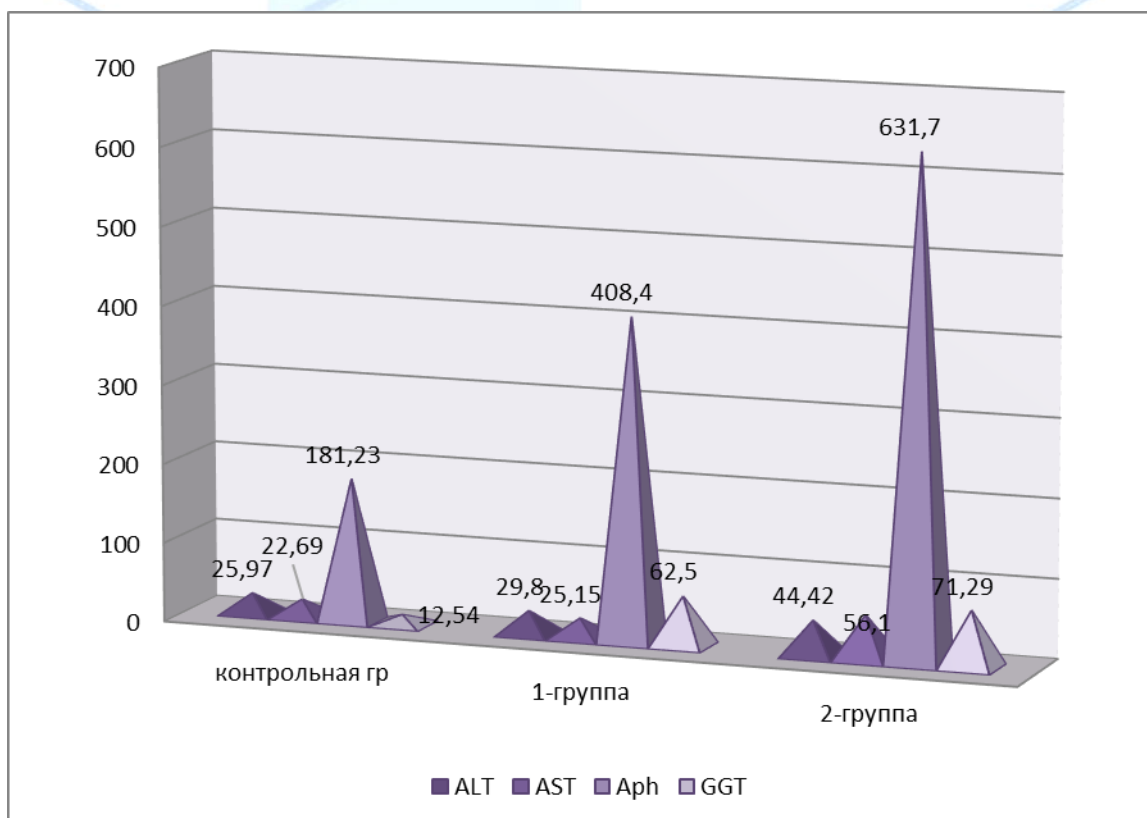


Figure 1. Markers of liver damage in respiratory allergies in children

A comparative assessment of the obtained liver ultrasound parameters showed the absence of a statistically significant shift in the morphometric parameters of the liver in children with respiratory allergies.

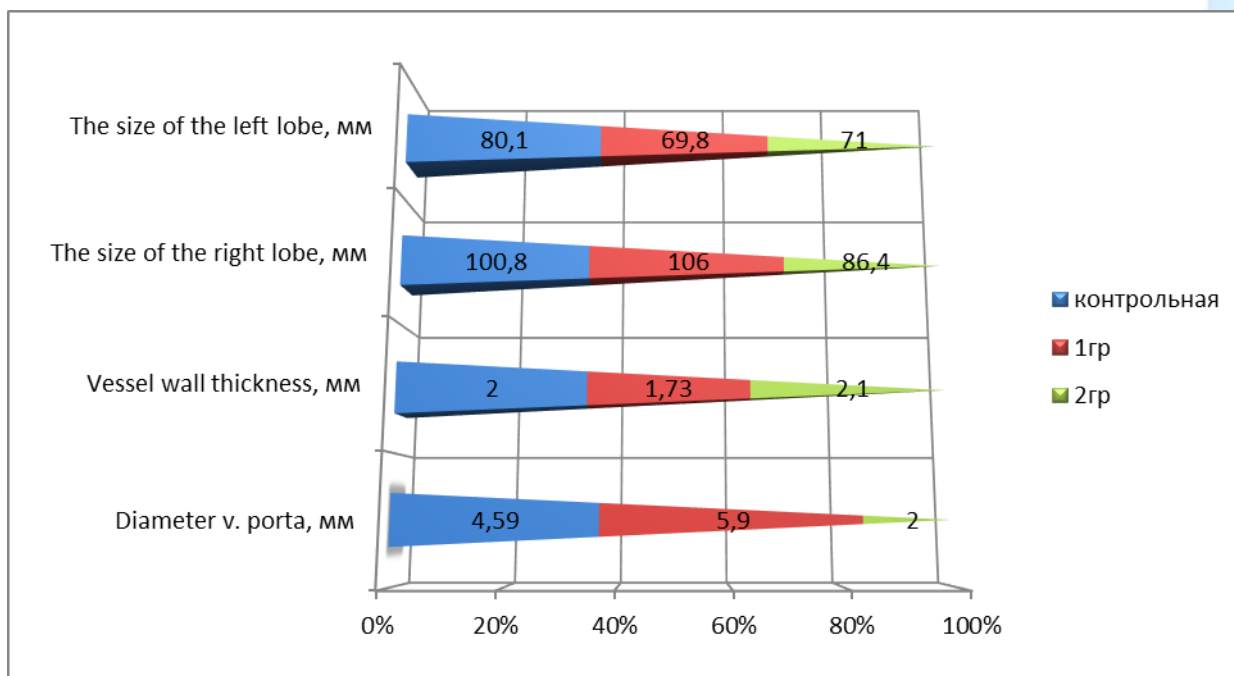


Figure 2. Parameters of liver ultrasound in children with respiratory allergies (M ±m)

The results of the liver ultrasound show no changes in the liver structure.

Conclusion. Thus, regardless of the clinical form of manifestation, respiratory allergy occurs against the background of systemic inflammation with liver damage in children. All this shows the importance of controlling the nutrition of children with respiratory allergies. In children with RA, there is an increase in markers of liver damage without morphological changes, which indicates the need to study the immuno-biochemical parameters of blood, the state of cytokine synthesis in RA to study the pathomechanisms of the development and outcome of respiratory allergies.

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