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The Importance of Platelets in Severe Forms of Allergic Diseases

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SUMMARY

in this article presents the results clinical trials, where the features of the course of common allergic diseases were identified in 96 children aged 5 to 18 years with diagnoses of bronchial asthma (BA), atopic dermatitis (AD), and allergic rhinitis. 27 children were observed with bronchial asthma, 33 children with atopic dermatitis (AD), and 36 children with allergic rhinitis . The clinical features of allergic diseases and their relationship with other infections and provoking factors leading to changes in the hemogram were studied.

KEYWORDS: *Bronchial, asthma, allergic rhinitis, atopic dermatitis, children , thrombocytosis.*

Relevance. Despite the great strides made recently in the study of allergies, many issues in the diagnosis of allergic diseases still remain unsolved. This is especially true for non-specific changes in the body, which largely determine the course and outcome of allergic conditions, provide the start, staged reactions, and form the functional background against which a specific process unfolds. Among the special manifestations that are important in the development of hypersensitivity reactions, disorders of the hemostatic system are of significant interest. [1].

Despite the fact that a lot of research has been devoted to the clinical picture and pathogenesis of allergic reactions, the mechanisms of the occurrence and development of hemorrhagic syndrome in these diseases cannot be considered sufficiently studied. Analysis of literature data concerning studies of the hemostasis system in allergic reactions reveals differences in the methodological and methodological approaches of researchers. [1, 2, 6, 7].

Today, infectious and inflammatory diseases are one of the most common causes of reactive thrombocytosis. Very often, the number of platelets in peripheral blood increases during pneumonia, sepsis, osteomyelitis, as well as after surgery and trauma, including allergic conditions [1]. In systemic inflammatory connective tissue diseases, such as rheumatoid arthritis, the level of cytokines increases, which stimulate platelet formation. As signs of inflammation decrease, the platelet count also decreases. [1, 2].

Primary thrombocytosis in children is very rare (with an incidence of approximately 1 case in 10 million people). This condition develops as a result of impaired control of platelet production and is associated with mutations in genes encoding proteins involved in the regulation of this process.

Platelets are small platelets of blood. They are not cells, since they do not contain nuclei, but are fragments of large megakaryocyte cells that are found in the bone marrow and other tissues [7]. 7-14 days is the average lifespan of a platelet [7].

The rate of formation of new platelets is regulated by a large number of hormones and hormone-like substances, the most important of which is thrombopoietin , which is formed mainly in the liver [7].

Platelets constantly patrol the walls of blood vessels and, if they detect damage, they immediately begin to stick to the damaged wall and to each other, forming a clot, which helps stop bleeding. They also play an important role in the processes of repair of damaged tissues [7].

If their number exceeds the normal limit, this condition is called thrombocytosis. Thrombocytosis can be primary or secondary.

Thrombocyte count is a marker of the onset of autoimmune diseases, including an increase in platelets in allergic diseases, indicating a severe state of the disease [2].

Materials and methods:

In the multidisciplinary clinic of the Tashkent Medical Academy in Tashkent, in the allergology department, 96 children aged 5 to 18 years with diagnoses of bronchial asthma, atopic dermatitis, and allergic rhinitis were under our supervision. 27 children were observed with bronchial asthma, 33 children with atopic dermatitis and 36 children with allergic rhinitis from September to December 2021. All our patients underwent the following laboratory tests: CBC, TAM, Ig determination E, T ORCH - infections and helminthic infestations.

Results and discussion. In 2 girls with grade 1 asthma aged 5-11 years, clinical signs manifested themselves in the form of a slight cough, with attacks occurring less than once a week. [3]. in 3 boys in the same age group, the following provoking factors were observed: cold air, tobacco smoke, physical activity, strong emotions and experiences, which contributed to the intensification of asthma symptoms. Two boys had symptoms such as discharge of watery mucus and frequent sneezing after sleep. And in one patient, these symptoms showed themselves to be less pronounced, but after a night or daytime sleep he often sneezed, and the FEV 1 and PEF values were over 80%. A girl in the second group of moderate severity had regular nocturnal attacks more than once a week, during which difficulty breathing was observed, exacerbations limited physical activity and sleep FEV 1 and PEF = 60-80%. One boy in the same group had symptoms of daytime and nighttime episodes of difficulty breathing. I would like to note that with severe asthma in 1 patient An obesity phenotype was noted, which led to frequent attacks of asthma against the background of ARVI; the course of the disease in this patient was refractory to treatment. The exacerbation period lasted longer than in other patients of the same severity group.

In the age group from 12 to 15 years, an increase in asthma symptoms was observed more often in girls than in the age group from 5 to 11 years. An increase in the number of attacks in this group was observed with frequent physical activity and with the use of cigarettes or when they were passive smokers. [3]. in this category of children, attacks were often expressed in the form of anxiety, fear and mood lability (Table *1)*

Table 1

Severity	Bronchial asthma (27)			
	5-11 years		12-18 years old	
	13		14	
	Girls	boys	Girls	boys
1 intermittent	2	3	2	2
2 mild persistent	1	2	3	1
3 moderate persistent	1	2	2	1
4 persistent severe	1	1	2	1

In total, there were 36 children with allergic rhinitis . (Table 2) Of these, the number of children aged 5-11 was -17, girls - 8, boys - 9. The intermittent degree was characterized by AR symptoms less than 4 days a week or 4 weeks a year. With persistent AR, symptoms were observed more than 4 days a week or more than 4 weeks a year. In the age group of 5-11 years, both girls (6) and boys (7), the following symptom complexes were noted with SAR (seasonal allergic rhinitis) : (paroxysmal sneezing, which could last from several seconds to several minutes, often accompanied by itching in the nose, and severe rhinorrhea was often noted [3]. And with CA R (year-round allergic rhinitis),

the following symptoms were noted: constant nasal congestion, difficulty in nasal breathing, and prolonged rhinorrhea. In 2 girls and 2 boys.

In groups 1 and 2, with grade 1 severity, children had mild symptoms of rhinitis, in which activity and sleep were not disturbed. At grade 2, both girls and boys had impaired activity, both in school and in sports. At grade 3, severe disturbances in sleep, physical activity and quality of life were noted. As can be seen from the table, in terms of age, boys prevailed in group 1, and girls prevailed in group 2.

Table 2

No.	**Allergic rhinitis**			
age	5-11 years (1 group)		12-18 years old (group 2)	
quantity	17		15	
By gender	Girls 8	Boys 9	Girls 8	Boys 7
SAR	6	7	5	5
KAR	2	2	3	1
1 mild degree	4	5	2	3
2 middle degree	2	2	3	3
3 severe degree	2	2	3	1

As can be seen from Table No. 3, a total of 33 children were hospitalized with atopic dermatitis. Group 1 consisted of 17 children, group 2 - 15 children. According to the prevalence of the disease with limited blood pressure, in group 1 there were 5 girls and 4 boys who had damage to the facial area. In group 2 with limited atopic dermatitis, there were 3 children in equal numbers of both girls and boys. The number of children with widespread hypertension in group 1 was 2 girls and 3 boys. In group 2 there were an equal number of boys and girls - 3 [3]. In group 1 with diffuse blood pressure there were 1 girl and 2 boys, group 2 included 2 girls and 1 boy.

Table 3

No.	**Atopic dermatitis (33)**			
age	5-11 (1 group)		12-18 (2nd group)	
	17		15	
By gender	Girls (8)	Boys (9)	Girls (8)	Boys (7)
Blood pressure is limited (5-10%)	5	4	3	3
AD widespread (up to 50%)	2	3	3	3
BP diffuse (more than 50%)	1	2	2	1
1 mild degree	5	4	3	3
2 middle degree	2	3	3	3
3 severe degree	1	2	2	1

According to severity level Mild AD in group 1, 3 girls had limited skin lesions in the form of itching, mild erythema, and 2 girls had skin lichenification and mild itching. [3]. 4 boys of the same group had lichenification of the skin and moderate itching. With a moderate degree, 2 girls had skin lesions with moderate exudation and hyperemia, combined with dry skin and itching, and boys in the same group had frequent exacerbations 3-4 times a year, dry skin and itching, prone to moderate exudation [6] . In severe cases in group 1, one girl had skin lesions with severe exudation, hyperemia, severe itching, which intensified at night, and disseminated skin lesions were also noted, especially in the extensor areas. A distinctive feature of group 2 was that in the process of skin

damage, lichenification was more prevalent than exudation. [3].

When analyzing clinical and laboratory tests, we noticed that for all allergic conditions (BP, AR and BA), [3,4] . Especially in severe forms, in addition to increased Ig E from (240-1283 IU/ mL). The hemogram revealed the following changes in blood parameters: there was an increase in the level of eosinophils from (5-12%), an increase in ESR (10-35 mm/h), in children with a virus-induced form of BA there was an increase in the level of lymphocytes from 65-87%, depending on age. [4,5]. With concomitant pathology T ORCH - infection: (CMV, herpes simplex virus , chlamydia and mycoplasma) in children with a significant increase in titers, a more severe course or refractoriness to treatment of allergic diseases was noted. It should be noted that in severe forms of AD, AR and BA in the acute stage, an increase in platelet levels from (310-847 10^9/l%) was observed [4,.5]. In addition, these children were found to have helminthic infestation in coprology (pinworms, roundworms, bovine tapeworm), which aggravated the course of the disease and was observed to be refractory to treatment, which was the reason for the development of chronicity of the process. [5].

Thus, the study of allergic conditions depending on the form and severity of the course showed that, along with clinical manifestations and markers of allergic inflammation, an increase in platelet levels was detected in severe forms of allergic diseases. This dictates the need for further study of hemostasis in children, especially quantitative and qualitative changes in platelet composition, which will allow optimizing pathogenetic therapy and prevention methods in children.

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