
ACCORDING TO THE IMMUNOLOGICAL PARAMETERS OF PEOPLE WITH FAMILY BRONCHIAL ASTHMA IN THE UZBEK POPULATION DIFFERENTIAL-DIAGNOSTIC AND PROGNOSTIC CRITERIA OF THE DISEASE

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ABSTRACT:

The article examines the spectrum of immunoglobulin, anti-inflammatory and increasing cytokines in blood serum in familial bronchial asthma, as well as the nature of the pathogenetic and clinical types that determine the course of the disease. 346 relatives from 49 families with bronchial asthma were examined. At the same time, total IgE, IL-6 and interferon- γ were tested in serum using the IFA method using the Vector-Best test system. Serum levels of total IgE, IL-6 and interferon-g detected in the blood serum of patients with familial bronchial asthma were analyzed for pathogenetic types of AD disease, disease severity, medical history and disease control. It has been shown that in familial bronchial asthma, an increase in total serum IgE, IL-6 and a decrease in interferon-g are differential diagnostic markers of disease progression, allergic type, accelerated disease progression and uncontrolled disease.

KEY WORDS: familial bronchial asthma, total IgE, IL-6, interferon-g, differential diagnosis, prognostic criteria.

RELEVANCE:

One of the main people of the pathogenesis of bronchial asthma is the remission of the immunological state of the organism. In bronchial asthma, a change in immunological reactivity develops, a violation of balance in the cytokine system is manifested. Cytokinins, which are part of the immune system, perform the main key function in bronchial asthma, participate in the development of a chronic inflammatory process and are responsible for the character of inflammation rejection. One type of cytokines is interleukins, which have an anti-immune effect on immune inflammation and inflammation in ba disease [5,6,7,8,9,10,12].

Also known is the increased amount of IgE in the blood serum in allergic diseases in cases of mumps. In bronchial asthma, however, an increase in the amount of IgE is considered to have an important diagnostic significance[4,11].

Despite the fact that the majority of the literature on immunological changes observed in bronchial asthma to date has been established, the immunological characteristic of bronchial asthma collected in the family in the Uzbek population has been poorly studied[1,2,3]. Therefore, it is necessary to study the immunological characteristics of

patients with family bronchial asthma in the Uzbek population.

PURPOSE OF THE STUDY:

To examine the evaluation of differential-diagnostic and prognostic criteria of the disease according to immunological parameters of patients with family bronchial asthma in the Uzbek population.

MATERIALS AND METHODS OF RESEARCH:

We studied IL - 6 and gamma - interferon in blood serum in patients with bronchial asthma, in 49 probands and 346 relatives from I - IV generations. Proband's relatives in the family were divided into 3 groups: relatives who suffer from BA (82/346 - 23.70%); other allergic diseases (allergic rhinitis, atopic dermatitis, urticaria and others (81/346 - 23.41%), as well as healthy relatives in the family (183/346 - 52.89%). Family members from 4 years to 78 years were 395 people, including 186 men (47.09%) and 209 (52.91%) women. The median age was 33.55 years.

All BA patients underwent comprehensive clinical and laboratory examinations. Patients were verified according to the who international classification (X-revision, ICD-10).

Immunological tests of patients with familial BA were performed in the laboratory of the Institute of immunology and immunodiagnosics of the Academy of Sciences of the Republic of Uzbekistan. Determination of the level of INF- γ and IL-6 in blood serum was performed by enzyme immunoassay using the test system for ELISA "ELISA-INF - γ -IL - 6" (JSC "Vector-best", Russia, 2009). Determination of IgE concentration in blood serum was performed using the enzyme immunoassay system of the research and production Association-Biotechnology.

The obtained data were subjected to statistical processing on a Pentium-IV personal computer using programs developed in the EXCEL package using a library of statistical functions with the calculation of the arithmetic mean (M), standard error (m), relative values (frequency,%), student's criterion (t) with the calculation of the error probability (p).

The control group consisted of almost healthy people living in the Republic of Uzbekistan aged 17 - 62 years (average age 28.64) 45 people (23 of them men and 22 women).

CONCLUSION:

In the study, the distribution of the quantitative index of total IgE, il-6 and interferon- γ detected in the blood serum of patients with family ba was carried out according to the pathogenetic types of the disease. It was noted that the mean value of total IgE, IL-6 and IFN- γ ($304,9 \pm 65,67$ me/ml; $14,0 \pm 2,7$; $7,1 \pm 1,6$ PG/ml) in blood serum in patients with family ba in the general group who were observed increased reliably ($67,2 \pm 16,4$ me/ml; $8,6 \pm 2,4$; $4,4 \pm 0,8$ PG/ml).

It was noted that the mean value of total IgE in the serum of patients with allergic type of familial BA disease (564.2 ± 72.04 IU / ml) was eight times higher than that of practically healthy individuals (67.2 ± 16.44 IU / ml). The mean value of serum IL-6 (18.3 ± 1.3 pg / ml) in patients with allergic type of familial BA disease was observed to be significantly higher than in practically healthy individuals (8.6 ± 2.4 pg / ml). The mean value of serum IFN-g (5.1 ± 0.12 pg / ml) in patients with an allergic type of familial BA disease did not differ significantly from that of practically healthy individuals (4.4 ± 0.8 pg / ml).

It was noted that the mean value of total IgE in the serum of patients with nonallergic type of familial BA disease (156.4 ± 21.5 IU / ml) was twice that of practically healthy

individuals (67.2 ± 16.44 IU / ml). The mean value of serum IL-6 (11.3 ± 1.06 pg / ml) in patients with nonallergic type of familial BA disease was not significantly different from that of practically healthy individuals (8.6 ± 2.4 pg / ml). The mean value of IFN - g (8.9 ± 1.08 pg / ml) was found to be twice that of practically healthy individuals (4.4 ± 0.8 pg / ml).

The mean values of total IgE, IL-6, and IFN-g in the serum of patients with a mixed type of familial BA disease were (312.9 ± 44.23 ME / ml; 14.8 ± 1.23 ; 7.87 ± 1 , respectively). , 28 pg / ml) was found to be significantly above the practically healthy individual index (67.2 ± 16.44 ME / ml; 8.6 ± 2.4 ; 4.4 ± 0.8 pg / ml).

1 – Table Characteristic of immunological indicators of pathogenetic types of bronchial asthma

Patients Group	Immunological indicators		
	IgE(IU/ml)	IL-6(PG/ml)	IFN-γ (PG/ml)
Control group	$67,2 \pm 16,44$	$8,6 \pm 2,4$	$4,4 \pm 0,8$
General Group	$304,9 \pm 65,67$	$14,0 \pm 2,7$	$7,1 \pm 1,6$
P	0,01	0,05	No
Allergic BA	$564,2 \pm 72,04$	$18,3 \pm 1,3$	$5,1 \pm 0,12$
P	0,01	0,02	No
Noallergic BA	$156,4 \pm 21,5$	$11,3 \pm 1,06$	$8,9 \pm 1,08$
P	No	No	0,05
Mixed BA	$312,9 \pm 44,23$	$14,8 \pm 1,23$	$7,8 \pm 1,28$
P	0,02	0,05	0,05

Analysis of our study showed that those who were diagnosed with family ba had an increase in total IgE, il - 6 in blood serum, a decrease in the amount of interferon-γ, a decrease in the amount of total IgE, il - 6 in blood serum, an increase in the amount of interferon-γ in noallergic type. These indicators were shown to be differential diagnostic immunological marker of the same type of disease while.

When the analysis of the immunological indicators of the disease in patients with ba in

the family is carried out on the pogons of the family, it can be concluded that the presence of family ba disease I – the average value of the total IgE in the blood serum ($311,1 \pm 32,4$ me/ml) in patients with pogony increased by 4.6 times from the indicator of practical healthy persons ($67,2 \pm 16.44$ me/ml), the average value of IL-6 in the blood serum ($18,2 \pm 2,9$ PG/ml) to the indicator of practical healthy persons ($8,6 \pm 2,4$ PG/ml), it was noted that the figure of individuals ($4,4 \pm 0,8$ pg/ml) increased by 1,6 times.

The average value of total serum IgE (262.6 ± 21.3 IU / ml) in patients with stage II familial BA was 3.9 times higher than in practically healthy individuals (67.2 ± 16.44 IU / ml). The mean value of IL-6 (17.7 ± 2.1 pg / ml) more than doubled from that of practically healthy individuals (8.6 ± 2.4 pg / ml), the average value of serum IFN-g (7.8 ± 0.9 pg / ml) was 1.7 times higher than that of practically healthy individuals (4.4 ± 0.8 pg / ml).

In patients with stage III familial BA disease, the mean value of total IgE in the serum (171.6 ± 18.6 IU / ml) was 2.5 times higher than in practically healthy individuals (67.2 ± 16.44 IU / ml). The mean value of IL-6 (14.5 ± 2.7 pg / ml) was 1.7 times higher than that of practically healthy individuals (8.6 ± 2.4 pg / ml), the mean value of IFN-g in serum ($8,9 \pm 1.4$ pg / ml) was twice as high as in practically healthy individuals (4.4 ± 0.8 pg / ml).

The average value of total serum IgE (132.3 ± 12.7 IU / ml) in patients with stage IV familial BA was 1.9 times higher than in practically healthy individuals (67.2 ± 16.44 IU / ml). The mean value of IL-6 (12.3 ± 1.9 pg / ml) was 1.4 times higher than that of practically healthy individuals (8.6 ± 2.4 pg / ml), the mean value of serum IFN-g ($9,6 \pm 1.2$ pg / ml) was 2.2 times higher than that of

practically healthy individuals ($4.4 \pm 0.8\text{pg} / \text{ml}$) [Table 2].

Table 2 Characteristic of immunological indicators on the severity of rejection of bronchial asthma in the family

The degree of severity of the disease	Immunological indicators		
	IgE(IU/ml)	IL-6(PG/ml)	IFN- γ (PG/ml)
Control group	67,2 ± 16.44	8,6 $\pm 2,4$	4,4 $\pm 0,8$
I stage	311,1 $\pm 32,4$	18,2 $\pm 2,9$	7,2 $\pm 1,1$
<i>P</i>	0,01	0,01	0,05
II stage	262,6 $\pm 21,3$	17,7 $\pm 2,1$	7,8 $\pm 0,9$
<i>P</i>	0,01	0,01	0,02
III stage	171,6 $\pm 18,6$	14,5 $\pm 2,7$	8,9 $\pm 1,4$
<i>P</i>	0,01	no	0,02
IV stage	132,3 $\pm 12,7$	12,3 $\pm 1,9$	9,6 $\pm 1,2$
<i>P</i>	0,05	no	0,01

In patients with familial BA, a decrease in total IgE and IL-6 levels in the patient's serum was observed with an increase in disease progression, but an increase in IFN- γ levels was observed. An increase in the severity of this disease can be predicted by the addition of infectious inflammation and insufficient control over the disease.

When analyzing the immunological parameters of patients with familial BA based on the length of the disease, the average value of total serum IgE ($304.2 \pm 24.9 \text{ IU} / \text{ml}$) in patients with familial BA up to 5 years was 67%. $2 \pm 16.44 \text{ ME} / \text{ml}$) 4.5-fold increase, the average value of total IgE in the serum ($271.6 \pm 26.7 \text{ ME} / \text{ml}$) in patients with familial BA with a history of 5-10 years was 4.0 times higher than in practically healthy individuals ($67.2 \pm 16.44 \text{ ME} / \text{ml}$) the average value of total IgE in the serum ($189.4 \pm 25.8 \text{ IU} / \text{ml}$) in patients with familial BA with 10-15 years of experience was 2.8 times higher than in practically healthy individuals ($67.2 \pm 16.44 \text{ IU} / \text{ml}$); The average value of total serum IgE ($172.7 \pm 22.4 \text{ IU} / \text{ml}$) in patients with familial BA for more than 15 years was 2.5 times higher than in practically

healthy individuals ($67.2 \pm 16.44 \text{ IU} / \text{ml}$). was found.

When analyzing the immunological parameters of patients with familial BA based on the length of service, the average value of serum IL-6 ($16.2 \pm 1.9 \text{ pg} / \text{ml}$) in patients with familial BA up to 5 years of age was 8%. , $6 \pm 2.4 \text{ pg} / \text{ml}$) increased by 1.9 times, the average value of serum IL-6 ($15.4 \pm 2.1 \text{ pg} / \text{ml}$) in patients with familial BA with a history of 5-10 years of disease was 1 ($8.6 \pm 2.4 \text{ pg} / \text{ml}$) from the practically healthy individuals. An 8-fold increase in the mean value of serum IL-6 ($14.6 \pm 2.3 \text{ pg} / \text{ml}$) in patients with familial BA with a history of the disease of 10-15 years compared to practically healthy individuals ($8.6 \pm 2.4 \text{ pg} / \text{ml}$). ml) increased by 1.7 times, the average value of serum IL-6 ($13.1 \pm 2.9 \text{ pg} / \text{ml}$) in patients with familial BA for more than 15 years ($8.6 \pm 2.4 \text{ pg} / \text{ml}$) was noted to increase 1.5-fold.

When analyzing the immunological parameters of patients with familial BA based on the length of service, the average value of serum IFN-g ($6.0 \pm 0.9 \text{ pg} / \text{ml}$) in patients with familial BA up to 5 years was 4 times higher than that of practically healthy individuals ($4.4 \pm 0.8\text{pg} / \text{ml}$) 1.3-fold increase, the average value of serum IFN-g in patients with familial BA with a history of 5-10 years ($6.4 \pm 1.2 \text{ pg} / \text{ml}$) is 1.5 times higher than in practically healthy individuals ($4.4 \pm 0.8\text{pg} / \text{ml}$). The average value of serum IFN- γ ($7.2 \pm 1.5 \text{ pg} / \text{ml}$) in patients with familial BA with a history of the disease of 10-15 years ($4.4 \pm 0.8 \text{ pg} / \text{ml}$) 1.6-fold increase in mean serum IFN-g ($8.4 \pm 1.4 \text{ pg} / \text{ml}$) in patients with familial BA with a history of more than 15 years (4.4 ± 0); $8\text{pg} / \text{ml}$) was noted to increase 1.9-fold [Table 3].

3 table Characteristic of immunological indicators for the duration of bronchial asthma

Duration of the disease	Immunological indicators		
	IgE(IU/ml)	IL-6(PG/ml)	IFN- γ (PG/ml)
Control group	67,2 \pm 16,44	8,6 \pm 2,4	4,4 \pm 0,8
1-5 years	304,2 \pm 24,9	16,2 \pm 1,9	6,0 \pm 0,9
P	0,01	0,05	no
5-10 years	271,6 \pm 26,7	15,4 \pm 2,1	6,4 \pm 1,2
P	0,02	0,05	no
10-15 years	189,4 \pm 25,8	14,6 \pm 2,3	7,2 \pm 1,5
P	0,05	0,05	no
15 йилдан куп	172,7 \pm 22,4	13,1 \pm 2,9	8,4 \pm 1,4
P	0,05	no	0,05

The table shows that in patients with familial BA, an increase in the length of the disease was accompanied by a decrease in total serum IgE and IL-6, and an increase in IFN-g. It is also possible to predict the presence of infectious inflammation and insufficient control over the disease.

When analyzing the immunological parameters detected in patients with familial BA according to the degree of disease control, the average value of total serum IgE in patients with familial BA (243.4 \pm 29.3 IU / ml) was lower than in practically healthy individuals (67.2 \pm 16.44). ME / ml) was significantly increased. The mean value of serum IL-6 (9.6 \pm 3.3 pg / ml) was lower than that of practically healthy individuals (8.6 \pm 2.4 pg / ml) and the mean value of IFN-g (4.8 \pm 0, 9 pg / ml) was not significantly different from practically healthy individuals (4.4 \pm 0.8 pg / ml).

The mean value of total serum IgE (456.7 \pm 32.8 IU / ml) in uncontrolled patients with family BA was 6.8 times higher than that of practically healthy individuals (67.2 \pm 16.44 IU / ml), serum IL-6 the mean value (15.7 \pm 4.5 pg / ml) was 1.8 times higher than that of practically healthy individuals (8.6 \pm 2.4 pg / ml). It was noted that the mean value of serum IFN-g (3.5 \pm 0.8 pg / ml) was significantly lower

than that of practically healthy individuals (4.4 \pm 0.8pg / ml) [Table 4].

The mean value of total serum IgE (243.4 \pm 29.3) in patients with familial BA was found to be twice as low as in non-controlled patients (456.7 \pm 32.8). Similarly, the mean value of serum IL-6 (9.6 \pm 3.3) was observed in patients with familial BA compared with uncontrolled patients (15.7 \pm 4.5). The mean value of serum IFN- γ (4.8 \pm 0.9) was not significantly different from that of uncontrolled patients (3.5 \pm 0.8).

Table 4 Characteristic of immunological indicators for controlled weight loss of bronchial asthma in the family

Degree of control of the disease	Immunological indicators		
	IgE(IU/ml)	IL-6(PG/ml)	IFN- γ (PG/ml)
Control group	67,2 \pm 16,44	8,6 \pm 2,4	4,4 \pm 0,8
Controlled BA	243,4 \pm 29,3	9,6 \pm 3,3	4,8 \pm 0,9
P	0,01	no	no
Uncontrolled BA	456,7 \pm 32,8	15,7 \pm 4,5	3,5 \pm 0,8
P	0,01	no	no

Immunological parameters in the patients in the study showed that the disease was in remission in patients with BA control, and consistent with the period of observation of BA in uncontrolled patients. This indicator is also of diagnostic and prognostic importance in the disease.

Table 5 shows the taxonomy of immunological indicators in the families of probands, caries and health care patients with family bronchial asthma in the study population. The table shows that the average value of total IgE in total serum in family probands (497.9 \pm 33.6 IU / ml) was significantly higher than in practically healthy individuals (67.2 \pm 16.44 IU / ml), IL-6 in serum The mean value of the amount (14.0 \pm 2.9 pg / ml) significantly exceeded the indicator of practically healthy individuals (8.6 \pm 2.4 pg / ml) and the average value of the

amount of IFN - γ in the serum ($7.1 \pm 1, 2$ pg / ml) was significantly higher than in practically healthy individuals (4.4 ± 0.8 pg / ml).

The mean value of total IgE in total serum (285.6 ± 29.3 ME / ml) in relatives with BA in the family was significantly higher than in practically healthy individuals (67.2 ± 16.44 ME / ml) and the mean value of serum IL-6 (12.4 ± 2.6 pg / ml) was significantly higher than that of practically healthy individuals (8.6 ± 2.4 pg / ml). It was noted that the mean value of serum IFN- γ (5.1 ± 0.9 pg / ml) did not differ significantly from that of practically healthy individuals (4.4 ± 0.8 pg / ml).

In healthy relatives in the family, the mean value of total serum IgE (304.9 ± 32.9 IU / ml) was significantly higher than in practically healthy individuals (67.2 ± 16.44 IU / ml) and the mean value of serum IL-6 ($9, 3 \pm 1.9$ pg / ml) was significantly higher than in practically healthy individuals (8.6 ± 2.4 pg / ml). The mean value of serum IFN- γ (4.8 ± 0.8 pg / ml) did not differ significantly from that of practically healthy individuals (4.4 ± 0.8 pg / ml).

Table 5 Characteristic of immunological indicators in individuals in the family

Group of those who conducted the study	Immunological indicators		
	IgE(IU/ml)	IL-6(PG/ml)	IFN- γ (PG/ml)
Control group	67,2 \pm 16,44	8,6 \pm 2,4	4,4 \pm 0,8
Probands	497,9 \pm 33,6	14,0 \pm 2,9	7,1 \pm 1,2
<i>P</i>	0,01	no	0,05
Sick relatives	285,6 \pm 29,3	12,4 \pm 2,6	5,1 \pm 0,9
<i>P</i>	0,01	no	no
Healthy relatives	304,9 \pm 32,9	9,3 \pm 1,9	4,8 \pm 0,8
<i>P</i>	0,01	no	no

Thus, total serum IgE levels were found to be higher in family probands (497.9 ± 33.6). This means that the disease in the proband occurred during the fall. In relatives with BA

(285.6 ± 29.3), the total amount of total IgE was lower than in the proband, indicating that the patients were in remission. High levels of total IgE in healthy relatives (304.9 ± 32.9) indicate that they have other allergic diseases. Serum IL-6 and IFN- γ levels also showed that family members were more suitable for the above stages of the disease.

The correlation between IgE, IL-6, and IFN- γ in the study groups in the family is shown in Table 6. The data in the table show that when a correlation was found between IL-6 and IgE concentration levels in patients with familial BA, a single correlation was confirmed in the general group of patients ($r = 0.64$; $P < 0.01$). It was also found that patients with allergic BA also had a correlation ($r = 0.74$; $P < 0.01$). There was a weakly expressed correlation between IL-6 and IgE concentration levels ($r = 0.25$; $P < 0.05$ and $r = 0.11$; $P < 0.05$) in patients with mixed and nonallergic BA disease.

Negative correlation between IFN- γ and IgE concentration level ($r = -0.34$; $P < 0.02$) in patients with bronchial asthma in the general group when studying the correlation coefficient value of IgE level and IFN-g in serum of patients with familial BA observed. It was also observed that patients with allergic BA also had a negative correlation ($r = -0.30$; $P < 0.02$).

6 – Table Correlation of IgE, IL-6 and IFN- γ in the study groups

Patients Group	Correlation indicators		
	IgE-IL-6	IL-6-IFN γ	IgE- IFN γ
General Group	0,64	-0,33	-0,34
<i>P</i>	0,01	0,02	0,02
Allergic Ba	0,74	-0,21	-0,30
<i>P</i>	0,01	0,05	0,02
Noallergic Ba	0,11	-0,41	0,04
<i>P</i>	0,05	0,02	no
Mixed Ba	0,25	0,04	0,22
<i>P</i>	0,05	no	0,05

Between IL-6 and IFN- γ concentrations, patients with BA also had a general ($r = -0.33$; $P < 0.02$), allergic ($r = -0.21$; $P < 0.05$) and especially nonallergic. in the group ($r = -0.41$; $P < 0.02$) a negative correlation was observed.

The results of the correlation analysis show that the production of cytokines in different pathogenetic forms of BA is specific.

CONCLUSION:

Thus, in the Uzbek population, the indicators of immune status in patients with familial bronchial asthma have important differential-diagnostic and prognostic significance.

An increase in total IgE, IL-6, decrease in interferon-g, decrease in total IgE, IL-6 in non-allergic patients, increase in interferon-g in patients with familial BA are differential diagnostic immunological markers of disease differentiation.

In patients with familial BA, a decrease in total IgE and IL-6 levels with increasing disease progression and experience, but an increase in IFN-g indicates the presence of infectious inflammation and insufficient control of the disease, indicating the need for timely treatment.

The identified immunological indicators are of diagnostic and prognostic significance, indicating that the high in probands in the family is the period of exacerbation of the disease, and the low in probands in relatives with BA indicates the period of remission of the disease. This indicates the need for timely treatment and prophylactic planning.

High levels of total IgE detected in healthy relatives in the family indicate the presence of other allergic diseases and a genetic predisposition to the disease, indicating the need for primary prophylaxis.

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