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Research Article

RESULTS OF IMMUNOLOGICAL STUDY OF PATIENTS WITH CHRONIC INFLAMMATORY DISEASES OF THE LARRYN

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ABSTRACT

Currently, in the treatment of patients with chronic inflammatory diseases of the larynx (CILD) , complicated by cicatricial changes of various etiologies, a variety of conservative treatment methods are used, including antibacterial, local anti-inflammatory, hormonal therapy and various types of physiotherapeutic procedures. Aggressive anti-inflammatory therapy using various antibiotics has an adverse effect on the immune system, causing a decrease in the intensity of the specific immune response and phagocytosis. In this case, a paradoxical effect of prolonged inflammation with subsequent chronicization of the disease may develop.

KEYWORDS

Immune status, larynx, inflammation, immunity.

INTRODUCTION

Despite the short period of time since the discovery of the phenomenon of apoptosis, a sufficient number of works have appeared in the literature devoted to this phenomenon in ENT diseases, in particular in pathology of the larynx. The focus of research in the field of laryngeal pathology on the study of apoptosis on the development of cancer has been reflected in the works of recent years [2-4]

Yes, the results Wen research QH et al . in 1995 year confirmed the hypothesis about the presence of a paradoxical mechanism that exists in laryngeal cancer. In this mechanism, epithelial growth factor (EGF) may play an important role in tumor progression, especially when its values are elevated.

At the same time Spafford M.F. et al . in 1996 , studying p 53 and CD 44, they suggested a loss of control of cell proliferation due to excessive release of p 53, as well as a decrease in cell adhesion caused by a decrease in the expression of CD 44, which may be indicators of survival in patients with laryngeal cancer. However, the authors noted that the tumor markers bcl -2 and PCNA in their study were not prognostic markers in this limited series of studies. The stem cell marker CD 34

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was also found to be expressed rarely by laryngeal cancer cells.

Works of subsequent years Whisler L.C. et al . convincingly demonstrated that multiple genes regulating proliferation and apoptosis are abnormally expressed in laryngeal cancer compared with normal epithelium. In particular, loss or apparent reduction in expression of the proapoptotic protein Bax may contribute to the uncontrolled growth of laryngeal cancer [4] . The authors expressed the opinion that further research is necessary to clarify the prognostic significance of certain types of impaired expression of proteins responsible for proliferation and apoptosis in various forms of head and neck cancer [5-8] . Therefore, already in 2003 Bai Y. _ and Hong S. _ Peng, using the example of studying the mediators of proliferation and apoptosis Ki -67 and Bcl -2, proved that the latter can play a role in the uncontrolled proliferation of laryngeal papillomas. From here, they concluded that Ki -67, bax , Bcl -2 can be determinants of precancerous stages of the larynx [9,10] .

Reliable results of experimental studies to identify various apoptotic markers of inflammation, as well as quite encouraging results in treating cancer patients and predicting the course, especially in the initial stages of the disease, prompted researchers to search for new methods for early diagnosis and treatment of this pathology [1] . Interest in this phenomenon was not limited to the study of tumorigenesis. In the literature of recent years, there has been a steady increase in interest in studies devoted to the problems of regulation of the mucous membrane of the larynx, proliferative processes occurring in the larynx and trachea, mucociliary clearance, etc. from the standpoint of apoptotic factors .

In this regard, the work of Japanese researchers Yamaguchi is of interest. T et al . And Yang CC . Works by Yamaguchi T et al . are devoted to the restoration of the mucous membrane of the larynx of pigs in cultural studies on a matrix gel structure. The authors found that fibroblasts and airborne interface treatment had a major effect on the proliferation and differentiation of cultured epithelial cells. These cultural systems can help create an appropriate physiological environment for studying the differentiation and diseases of the larynx of various origins.

Results . Considering the important pathogenetic role of immune system disorders in the mechanisms of development of CIDH, especially in patients with prolonged cannulation, as well as unsatisfactory treatment results when prescribing antibiotics, allergization of the body, and the possibility of developing toxic and side effects, we studied the immune status.

A study of the immune status of patients revealed changes in the state of immunity. See Table 1 . The results of a study of the cellular component of immunity are presented.

As can be seen from the presented data, patients had a significantly increased level of leukocytes and a decrease in lymphocytes. The range of individual values varied widely - from 2900 to 136,000 cells/ml, and leukocytosis was recorded in almost half of the patients. An increased level of lymphocytes was observed in only 10% of patients, and lymphopenia in 50%. The content of T-lymphocytes (CD3 cells) averaged 50.4±1.8%, significantly different from the control data ($P<0.01$). The absolute value of CD3 cells was also found to be below normal values.

The level of immunoregulatory subpopulations of T-lymphocytes T-helpers (CD4) and T-suppressor/cytotoxic cells (CD8) was also detected significantly lower than control values.

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For T-helper cells, the CD4 cell rate averaged 25.7±1.1%, which was significantly lower than control data (P<0.01).

In absolute values, we noted a similar significant decrease in the number of T-helper cells (P<0.01).

The content of T-suppressors - cytotoxic cells (CD8) was also recorded quite lower than control values in both relative and absolute values (P < 0.001).

An equal decrease in both T-helpers and T-suppressors did not cause significant changes in the immunoregulatory index. The ratio of CD4/CD8 lymphocytes did not differ from the values in the control group.

Thus, analysis of the study results in patients with CIH revealed a significant impairment of T-cell immunity, which is typical for chronic respiratory diseases.

Indicators of humoral immunity are presented in table. 2 . As can be seen from the presented data, the content of B- lymphocytes (CD72) compared to the control is slightly increased, but statistically insignificant (P>0.05).

Table 1 .

Indicators of T-cell immunity in patients (M ± m)

Index	Healthy donors, (n =20)	Patients, (n =20)	R
Leukocytes cells/ml	6400.2±300.4	7790.1±630.2	<0.05
Lymphocytes, %	34.2±2.2	25.5±1.4	<0.01
Lymphocytes, abs.	2188.1±100.3	1986.1±39.2	< 0.05 _
CD3 lymphocytes, %	58.4±1.4	50.4±1.8	< 0.001
CD3 lymphocytes, abs.	1270.1±31.2	994.2±35.1	< 0.001
CD4 lymphocytes, %	30.8±1.3	25.7±1.1	< 0.01
CD4 lymphocytes, abs.	672.1±28.2	510.1±22.3	< 0.01
CD8 lymphocytes, %	20.2±0.9	16.5±0.5	< 0.001
CD8 lymphocytes, abs.	442.1±20.2	327.1±10.3	< 0.001

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IRI, CD4/CD8	1.52±0.003	1.55±0.05	> 0.05

Table 2 .

Indicators of humoral immunity in patients (M ± m)

Index	Healthy donors, (n =20)	Patients, (n =20)	R
CD72 lymphocytes, %	16.2±1.0	17.9±1.2	>0.05
Ig A , mg%	234±6	192±7	<0.001
Ig M , mg%	114±10	122±6	> 0.05
Ig G, mg%	1072±46	1055±38	> 0.05

of exceptional importance in protecting against pathogenic effects of various pathogenic and opportunistic microorganisms. We studied immunoglobulins of classes A , M and G in the blood serum of patients before treatment. Average Ig content G in patients did not differ significantly from values in the control group (P >0.05). Average Ig content A was significantly reduced in patients before surgery (P < 0.001).

Considering the important role of Ig And in protecting the body and, above all, mucous membranes from infection, we can conclude that such a violation of the biosynthesis of immunoglobulin of this class may be one of the reasons for the decrease in immune reactivity and frequent infectious processes.

IgM content showed a tendency to increase, but both the average values and individual values did not differ significantly from the norm.

Thus, we did not detect any obvious deficiency in the content of IgG and IgM . Only IgA deficiency was noted , indicating suppression of the body's immune systems, which can serve as a factor in the development of purulent-inflammatory complications.

Of the body's natural protective factors, the most important role belongs to natural killer cells and phagocytosis. Phagocytosis is aimed at both destruction and maintenance of cellular balance.

Disorders of phagocytosis functions depend on the duration, severity and recurrence of infectious diseases. As the results of our studies have shown, in patients with chronic tracheobronchitis, the phagocytic activity of neutrophils is seriously suppressed and averages 35.3±2.0%, which is significantly lower than control data.

A decrease in FAN indicates a defect in the absorption capacity of neutrophils, which may be associated with

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a violation of the triggering mechanisms of phagocytosis.

One of the reasons for the decrease in FAN may be antibacterial treatment, in particular, the widespread use of antibiotics, which can suppress the immune response with uncontrolled long-term use.

The metabolism of human neutrophils is inhibited by some viruses. It is possible that the weakening of the bactericidal function provoked by a viral infection plays an important role in the pathogenesis of relapses in our patients. Thus, a study of the number of natural killer cells in patients before surgery revealed their decrease in both average and individual values. However, this decrease was not statistically significant (P>0.05).

CONCLUSIONS

Thus, our data confirmed that multi-stage surgical treatment and long-term antibiotic therapy adversely affect the immunological reactivity of patients with CIDH. In these patients, disturbances of immune homeostasis and a developed deficiency of cellular and humoral immunity and nonspecific protective factors were revealed.

The violations we identified were:

- violation of cellular immunity with insufficiency of immunoregulatory subpopulations of T-helpers and T-suppressors (CD4 and CD8 cells);
- suppression of humoral immunity (IgA);
- inhibition of the functional activity of phagocytes;
- decrease in natural cytotoxicity (CD16 cells).

This allows us to consider patients with CIDH as patients with established secondary immunodeficiency, which requires appropriate treatment with the use of immunomodulators.

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