International Journal of Studies in Natural and Medical Sciences
Volume 02 Issue 12, December, 2023
ISSN (E): 2949-8848
Scholarsdigest.org

Inflammation of The Nasal and Nasal Lateral Cavities in Allergic Rhinitis Specificity of Assessment of Clinical and Morphological Indicators

Ulmasov A.O.
Department of Otorhinolaryngology
Andijan State Medical Institute Andijan, Uzbekistan

Abstract:
Polypous rhinosinusitis (PRS), a chronic inflammatory disease of the mucous membrane of the nasal cavity and paranasal sinuses, characterized by recurrent growth of polyps, is an urgent problem of otorhinolaryngology. This is due to the high prevalence, the tendency to increase the incidence, the complexity and relatively low effectiveness of treatment. Nasal polyposis is more or less pronounced in 2.1-4.3% of the adult population, mainly in men (2.2:1), older age groups (the average age of patients is 49.4 years) and often complicates the course of bronchial asthma.

Keywords: paranasal sinus, allergic rhinitis, morphology, assessment.

Introduction

It was revealed that TGF-β1 is involved in the regulation of the restoration of the epithelium of the upper respiratory tract [32]. In addition, TGF-β participates in vascular remodeling, and also participates in the process of neoangiogenesis [55]. However, there are practically no studies on the role of this cytokine in inflammatory diseases of the upper respiratory tract at the moment. According to modern concepts, IFNy secreted by T-lymphocytes is a key cytokine that exhibits antiviral and antibacterial activity. It has an immunomodulatory effect by regulating the interactions of immunocompetent cells, activates natural killers and enhances phagocytosis [23]. Being a Th1-type product, it, together with other pro-inflammatory cytokines, participates in the activation of macrophages, cytotoxic T-lymphocytes, natural killers, suppressing the activity of B-lymphocytes, activates the prostaglandin and corticosteroid systems. Due to these factors, phagocytic and cytotoxic reactions in the area of the focus of inflammation are enhanced, which contributes to the effective elimination of the infectious agent [25]. Undoubtedly, the study of the role of cytokines in the immunopathogenesis of AR with CRSBE is an urgent task. At the moment, there are few studies on the cytokine profile in the combined form of rhinitis. It should be noted that most of the research work on the study of cytokine levels was carried out in blood serum. Of modern scientific interest is the study of cytokine production as a reserve capability of immunocompetent cells in the focus of inflammation. Determining the

level of the studied mediators directly in the focus of inflammation, namely nasal secretions, in our opinion, can more accurately reflect the nature and intensity of the inflammatory reaction and, accordingly, this method has more informative value. Thus, the study of the cytokine profile in the biological exudate directly in the focus of inflammation is necessary to study the pathological mechanism of the development of the inflammatory process in this pathology. At the present stage, it is believed that the leading role in the pathogenesis of AR belongs to I-mediated allergic reactions. At the same time, the role of the general ID in the development of the infectious process is known. IgE-mediated reactions are involved in protection against most antigens, including infectious ones. In a number of studies, it was found that during the development of infection, the immune system responds by activating Th2 type with an increase in IgE production [7, 10]. However, the immune response to allergens and infectious agents is not limited to the formation of only IdE. It is also associated with other classes of immunoglobulins, which are also of great importance. Determination of the level of immunoglobulins in combination with other indicators makes it possible to assess the state of immunity. Of particular interest is the study of the level of immunoglobulins in nasal secretions, since chronic inflammation contributes to the development of a local transient immunodeficiency condition, which may be due to changes in their production. One of the components of the protective system of nasal secretions is sIgA, which is of great importance in the mechanisms of antimicrobial and antiviral protection of the upper respiratory tract. sIgA is synthesized by plasma cells under the action of cytokines and exhibits its bactericidal and antiviral activity by binding to toxins and lysozyme. Thus, it was found that a decrease in sIdA may indicate a lack of local immunity function, and an increased amount of it may indicate an imbalance in the immune system [17]. In the domestic work, a decrease in sIgA in saliva ($p < 0.05$) was revealed in patients with moderate to severe AR in combination with foci of chronic infection [5]. In addition to the mucous membranes, IgA is found in the blood serum. Both IgA, secretory and serum, are able to neutralize and remove pathogens. The main role of IgA in the protection of the mucous membrane is to provide an immune barrier that prevents the penetration of microbial pathogens by neutralizing infectious agents by blocking surface bacterial adhesins and activating phagocytosis. IgA is able to reduce the viscosity in the airways, participate in the mechanisms of microbial lysis and phagocytosis, start the process of inactivation of pathogens, release pro-inflammatory mediators by phagocytes. These possibilities indicate its anti-inflammatory properties. IgG participates in the reaction of inflammation, both allergic and infectious, forming an antigen-antibody complex, which contributes to the neutralization of bacterial exotoxins, phagocytosis, and complement fixation. IgM is the first antibody secreted by the immune system, in the focus of inflammation, in response to the action of a foreign agent. IgM is produced by plasma cells, participates in the neutralization and removal of pathogens, carrying out an inflammatory response through the complement system. IgM can penetrate the mucous membranes and,

interacting with IgA, neutralizes infectious agents and facilitates the clearance of apoptotic cells.

The purpose of the study. To experimentally study the morphological structure of the nasal mucosa and paranasal sinuses in acute sinusitis occurring against the background of allergic rhinitis.

Material and methods of research. Proceeding from the above, we experimentally studied the nature of the inflammatory process of the nasal mucosa and paranasal sinuses in acute sinusitis occurring against the background of allergic rhinitis on guinea pigs.

The result of the study. The average age of patients in the main group was 49.72±11.8 years, in the control group 48.12±10.23 years. Men accounted for 52.5% of patients, women - 47.5%. The duration of the disease varied from 0.3 to 15 years.

According to the anamnesis, it was found that only 36 patients (30%) had previously used nasal glucocorticosteroids for treatment, 15 patients (12.5%). The remaining patients did not use vasoconstrictive drops (42.5%) and antihistamines (20%) before.

Intolerance to nonsteroidal anti-inflammatory drugs (NSAIDs) was detected in the anamnesis in 15% (18), allergy to household allergens - in 17.5% (21), to food products in 5% (6) patients. Bronchial asthma was found in 25% of patients, whereas according to literature data, nasal polyposis is combined with bronchial asthma in 45% of cases [Rugina M., 2002]. Probably, such a low rate of bronchial asthma in inpatient patients is explained by the severity of this pathology, which in some cases levels the significance of nasal symptoms for the patient and the need to consult an otorhinolaryngologist. A positive correlation was found between the presence of bronchial asthma and intolerance to NSAIDs (Spearman's coefficient R-0.40, $p<0.05$). The latter suggests that polypous rhinosinusitis most often develops with aspirin bronchial asthma, forming a nosological form known as aspirin tra.

From the anamnestic data, we also analyzed such indicators as the number and frequency of relapses. The latter was defined as the ratio of the number of operations performed to the duration of the disease. 60 patients (50%) had no history of surgical interventions. For the rest, the number of operations varied from 1 to 20 and averaged 2.7±2.28 (-0.01). Thus, the average recurrence rate in the main group is 0.22±0.25 per year ($p<0.05$).

Clinically, 100% of patients had difficulty in nasal breathing. Olfactory impairment was observed in 111 patients (92%). Analysis of a group of patients with olfactory impairment showed that its degree positively correlated ($p<0.05$) with the degree of difficulty in nasal breathing (1, -0.46), the volume of nasal discharge (V.-0.43) and the frequency of sneezing attacks (-0.31)

Pathological nasal discharge was detected in 105 patients (87%). It was mucosal in 42 (35%) patients, serous in 48 (39%), mucopurulent in 9 (8%) and purulent in 6 (5%) patients.

Attacks of sneezing and itching in the nose were observed in 63 patients (53%). At the same time, a correlation of this symptom was revealed with the presence of allergy to household allergens in patients (8, 0.46), as well as with difficulty in nasal breathing (8.-0.34) and nasal discharge volume (8,-0.45).

In all patients (100%), the lesion of the scythe mucosa with polyposis was bilateral. According to the degree of prevalence, 90 patients (75%) were diagnosed with the fourth, 30 (25%) with the third stage of the disease. The most significant correlations of the stage of the disease were found not only with the degree of difficulty in nasal breathing (8,044, $p<0.05$), which is with the generally accepted criterion of severity of polyposis [MeClay 1st, 2008], but also with the severity of olfactory impairment (8,-0.43, $p<0.05$). This suggests that hypoosmia, along with difficulty breathing, can be not only a criterion for the prevalence of the polypous process in the nasal cavity, but also an indication for further examination and treatment of the patient during the initial visit to the doctor.

We analyzed the clinical data at the end of the course of treatment, which revealed a decrease in the intensity of the main symptoms of polypous rhinosinusitis. In particular, significant changes according to the Wilcoxon paired test ($p<0.001$) were recorded in the degree of difficulty in nasal breathing (2-3.5), impaired sense of smell (2-5.1), volume (2-5.1) and nature (2-4.6) of pathological discharge from the nose, frequency of itching attacks and nose and sneezing (2-3,7). According to the prevalence in the nasal cavity, the polypous process against the background of treatment in the vast majority of patients (076) passed into the kulev and the first stage, whereas before treatment, 75% of patients had the fourth stage, 25% had the third stage of PRS

According to the results of the clinical study of patients with polypous rhinosinusitis, significant differences from the control group in hemoglobin content, eosinophil and erythrocyte sedimentation rate (ESR) were revealed. The average hemoglobin content in the main group was the same as in the control group (134.9 14.2g/l 147.4±14.8 t, respectively, $p<0.01$). At the same time, it was positively correlated with the number of cro lymphocytes (-0.38, $p<0.05$). The erythrocyte sedimentation rate in patients with polypous rhinosinusitis averaged 11.678.72 mm/hour, which is significantly higher ($p<0.05$) than the ESR index in the control group (6.33+5.61 mm/hour). The number of eosinophils in patients of the main group was also higher than their number in healthy individuals (4.3=1.7% and 1.67±0.63%, respectively, $p<0.05$).

Conclusions

Clinical and laboratory criteria for the prevalence, stage and duration of the course of polynous rhinosinusitis are difficulty in nasal breathing, impaired sense of smell and peripheral blood eosinophilia.

The immunohistochemical method revealed an increased content of mast cell tryptase in polypous tissue, reaching maximum rhinosinusitis values of h with a short duration of polyposis with concomitant intolerance to nonsteroidal anti-inflammatory drugs.

In the nasal mucosa with polypous rhinosinusitis, a high content of immunoglobulin E and the relationship of its level with the secretory activity of mast cells and with the concentration of immunoglobulin E in blood serum were revealed.

References

1. Marushko Yu. V. The experience of using topical decongestants in children of early childhood / Yu. V. Marushko // The attending physician. – 2010. – No. 11. – pp. 86-90.
2. Bakhert, S. Comparison of the efficacy and safety of bilastine at a dose of 20 mg and desloratadine at a dose of 10 mg in patients with seasonal allergic rhinitis / S. Bakhert [et al.] // Allergy. - 2009. – No. 64. – pp. 158-165.
3. Meltzer E. O. Evaluation of the optimal oral antihistamine drug for a patient with allergic rhinitis / E. O. Meltzer // Mayo Clinical Journal. – 2005. – № 80 (9). – P. 1170-1176.
4. Mesges, R. The effectiveness of modern antihistamines for the treatment of allergic rhinitis – Meta-analysis of IPD 140 853 patients / R. Mesges, V. Koenig, J. Keberlein // Allergol Int. – 2013. – № 62 (2). – P. 215-222.
5. Network meta-analysis of randomized controlled trials, dedicated to various medications for allergic rhinitis / Huang Xiao, [et al.] // American Journal of Therapeutics. – 2016. – № 23 (6). – R. e1568– e1578.
6. Petersen, T. H. Corticosteroids in allergic rhinitis // T. H. Petersen, L. Agertoft // Modern methods of allergy treatment. – 2016. – No. 3. p. 18.