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Resistance of the mucous membrane of the oral cavity during hypertrophy of the lingual tonsil

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Abstract

The article presents the results of studies that indicate that with hypertrophy of the lingual tonsil, weakening of the resistance of the oral mucosa to external influences is observed. This is due to sensitization, intoxication, depletion of the body by various pathogens that disrupt the regulation and repair processes in the body.

Keywords: lingual tonsil; cellular composition of oral fluid; immune response.

Introduction. The most common nosologies in the practice of an otorhinolaryngologist are chronic diseases of the pharynx. Frequent exacerbations, rapid chronization of the process, and the severity of complications make this problem relevant not only medical, but also social. At the border of the external environment and the natural internal cavities of the body is the natural cavity of the body - the oropharynx. One of its main functions is to prevent the entry of pathogens into the body, as well as the neutralization of

microorganisms that have fallen on the mucous membranes of the upper respiratory tract [1, 2]. The protective function is carried out by the borderline formations of lymphadenoid tissue located at the beginning of the upper respiratory tract, which have certain structural and functional characteristics of the body and are known as the Valdeyer-Pirogov ring.

The most active and largest by mass of these formations are palatine and pharyngeal tonsils [3, 4]. The defeat of the palatine tonsils - acute tonsillitis, according to ICD 10 [5], has a viral or bacterial origin. Acute recurrent tonsillitis of viral origin is most often accompanied by hypertrophy of the palatine tonsils, an increase in regional lymph nodes, i.e. development of lymphoproliferative processes is observed [6, 7]. Differential diagnosis of viral and bacterial tonsillitis is carried out according to the diagnostic evaluation system using the modified Centor/McIsaac scale [8]. Surgical removal of palatine tonsils in patients with tonsillitis of viral origin not only does not contribute to recovery, but only exacerbates immunological deficiency, leads to increased load on the lymphatic tissues of the whole organism as a whole.

The lingual tonsil, being one of the largest clusters of RT, can compensate for the changes that have taken place, however, compensation may be temporary. Subsequent decompensation of the organ leads to pathological changes in microstructural formations that form the morphological basis of NM. In conditions of increased functional load, an increase in the mass of the remaining lymphoid tissue is possible - hypertrophy of the lingual tonsil. In the available literature, we did not find data on diagnostic methods on the adequacy of compensating for the loss of local resistance of the oral mucosa by hypertrophic lingual tonsil.

Purpose of the study: The aim of the work was to assess changes in local resistance of the oral mucosa in patients with lingual tonsil hypertrophy and to identify their correlation with the state of the immune response systems.

Materials and methods. The material of this study was the data obtained during the examination of 119 patients with hypertrophy of the lingual tonsil of different age groups. The first group consisted of patients from the control group. Patients were divided into groups depending on age. The second group consisted of 59 patients aged 18 to 44 years, and the third - 60 patients aged 44 to 68 years.

The state of local resistance of the oral mucosa was assessed by changing the cellular composition of the contents of the oral cavity. To obtain smears, fluid accumulating in the sublingual fossa was collected for 5 minutes. Then, the resulting liquid was centrifuged at 3000 rpm for 10 minutes. A drop of the resulting precipitate was applied to a glass slide and a smear was prepared. The smear was dried in the open air at room temperature, fixed for 2

hours in alcohol-ether vapors; stained with hematoxylin - eosin and enclosed in a canadian balm under a coverslip. The resulting preparation was examined under a light microscope from Carl Zeiss (Prima Star model), the absolute and relative contents of lymphocytes, neutrophils, erythrocytes, desquamated epithelial cells, fibroblasts, and “bare nuclei” were determined. The assessment was carried out using a morphometric grid in at least 5 fields of view in each smear. The cytological method made it possible to judge the severity and nature of the inflammatory process [9]. In some patients, to confirm the diagnosis and differential diagnosis, with the consent of the patient, biopsy preparations of tonsils taken during initial treatment were studied.

Immunological parameters were determined in the blood: the content of phagocytes, the phagocytic index, complement activity, the content of circulating immune complexes (CEC) and the concentration of antibodies to the tissue of the lingual tonsil. All patients underwent bacteriological examination from the mucous membranes of the mouth and nasopharynx, a coprogram (CT) to identify pathogenic flora, protozoa, and enzymatic insufficiency of the gastrointestinal tract. Statistical processing of the resulting results was welcomed from the rest of the package of statistical analysis Microsoft Exel 2010 (Microsoft, USA, 2010) and Statistica 6.0 (StatSoft, 2006).

Results and its discussion. During the examination, all patients presented characteristic complaints - sore throat, foreign body feeling, chirping, signs of dysphagia, snoring at night. An objective study revealed hypertrophy of the lymphoid tissue of the lingual tonsil from partial papillary growth to diffuse growth, partially blocking the entrance to the esophagus. Often hypertrophy was observed in people after an adeno- and tonsillectomy. CT and ultrasound (ultrasound) of the submandibular region were performed.

The lingual tonsil with ultrasound was visualized as a formation with reduced echogenicity of the tissue without clear round-shaped borders, relatively uniform, located among the characteristic and easily recognizable landmarks of the bottom of the oral cavity and pharynx. A scale of radiological and endoscopic gradation was used. Clinical manifestations were most intense with a 3-4 degree increase in lymphoid tissue of the root of the tongue. The results of the study of smears of the contents of the oral cavity in patients showed a change in the ratios of cellular elements compared with healthy individuals.

According to table 1, in patients of all age groups in the contents of the oral cavity, the content of lymphocytes and bare nuclei sharply increases. The latter are parts of the cells of the epithelium of the oral mucosa destroyed by lytic autoimmune reactions. Simultaneously with the increase in the number of lymphoid elements, a sharp decrease was observed in most

cases of the number of segmented neutrophils and desquamated epithelial cells. Since neutrophils have phagocytic activity, a decrease in their number in the oral contents may indicate a decrease in the body's resistance.

Table 1 - Changes in the cellular composition of oral fluid in patients with lingual tonsil hypertrophy of different ages

Indicators	The first group, control, n =30	The second group, 18-44 years old, n=59	The thirdgroup, 45-68 years old, n = 60
Lymphocytes	6,50±0,46	37,73±2,12*	35,65±7,41*
Neutrophils	19,74±0,44	7,61±0,11*	11,65±3,70*
Epithelium	59,21±6,44	48,54±7,26	43,68±7,72
"Bare nuclei"	0,39±0,11	6,12±0,51*	9,02±0,51*

Note. * - reliable in relation to control

A decrease in the content of desquamated epithelium may be a reflection of disturbances in the regeneration processes in the oral mucosa. It should be especially noted that, by their nature, changes in the contents of the oral cavity were the same in patients of all age groups. However, they are most pronounced in 3 groups of patients older than 44 years. Perhaps the quantitative differences identified are associated with the state of regulatory systems at different periods of a person's life. Representatives of all age groups with hypertrophy of the lingual tonsil have a decrease in the number of active phagocytes.

Moreover, in persons older than 44 years, this decrease was more pronounced. At the same time, the phagocytic index is significantly reduced i.e. the absorption function of these cells is reduced. The most significant decrease in absorption capacity is observed in patients older than 44 years. Along with a change in the cellular contents of the oral cavity, a change in the indicators of the immune response was observed in the examined patients (Table 2).

The complement activity of representatives of all age groups is within the physiological corridor, but closer to its upper boundary. The content of circulating immune complexes in the 2nd and 3rd groups was significantly higher than the indices obtained in the 1st control group. A fairly high IgE-total in the examined patients indicates the presence of an allergic process in the body caused by an increased immune response.

According to additional studies, the examined patients revealed helminths, protozoan, fungal lesions, which suggests a significant depleting load on the immune system, and on the other, the existence of a source of constant sensitization in most of the examined patients. All

patients have the appearance of antibodies to the tissue of the lingual tonsil in a fairly high titer. It can be assumed that in the humoral component of the immune response, there are significant violations.

Table 2 - The immune status of patients with hypertrophy of the lingual tonsil of different age groups

Indicators	The first group, control, n=30	The second group, 18-44 years old, n=59	The third group, 45-68 years old, n=60
Antigen titers tissue of the lingual tonsil, cu	5,21±0,71	23,33±1,82*	32,0±2,00*
CEC, mg / ml large	6,11±0,14	6,01±0,03	8,01±0,45*
CEC, mg / ml average	65,11±4,52	79,02±6,21*	83,12±16,21*
CEC, mg / ml small	130,05±10,11	196,06±15,22	172,11±11,22*
ASLO ME / ml	112,33±11,41	232,01±22,50*	293,67±25,46*
IgE, mU / L	70,10±6,21	209,58±23,50*	134,14±20,50*
CD4 + / CD8 +	2,48±0,16	4,09±0,64*	3,05±0,74

Note. * - reliable in relation to control

Thus, the results of our studies showed that the presence of lingual tonsil hypertrophy in different age groups is accompanied by a weakening of the resistance of the mucous membranes of the oropharynx, a decrease in the number of neutrophils, and the appearance of “bare nuclei”. This occurs against the background of a general weakening of the immune response mainly in its cellular component, a decrease in the number of phagocytes and their absorption capacity. Perhaps such a restructuring is associated with the presence in the body of these patients a source of constant sensitization, affecting the humoral component of immunity and the activity of the phagocytic link.

Conclusions

1. Hypertrophy of the lingual tonsil does not provide compensation for the reduced resistance of the oral mucosa to adverse effects.

2. Overstrain of the functional activity of the immune system with additional hazards: fungi, protozoa, viruses, contributes to the development of hypertrophic processes in lymphoid formations.

3. Changes in the cellular composition of the contents of the oral cavity can serve as a marker of the state of the local immune response of the nasopharynx.

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