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Investigating the Microflora of Patients with Benign Sinusoidal Tumors and Non-Cancerous Nasal Tumors

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Annotation. In patients with antritis in innocent tumors of the nasal cavity and paranasal sinuses composition of microflora is different from the primary sinusitis: the extent of the isolation of anaerobes, fungi and microorganisms associations increases with the growth and spread of tumors.

Keywords: innocent tumor, sinusitis, microflora.

Introduction

There has been a trend towards an increase in diseases of the paranasal sinuses due to the decrease in local and general immunity, worsening environmental conditions, and the development of antibiotic-resistant strains of microorganisms [3, 7, 9]. This is caused by both late diagnosis and the resistance of flora to conservative treatment. The causes of sinusitis can be acute respiratory viral infections, spurs, crests, and deviations of the nasal septum, hypertrophy of nasal turbinates, hyperplasia of the mucous membrane or polyps, and various tumors. In the paranasal sinuses, closure of the natural ostium leads to stagnation of mucous gland secretions, changes in pH, metabolic disturbances in the mucous membrane, disruption of ciliary function, as well as activation of conditionally pathogenic flora [2]. Typically, with the presence of the above factors, the disease takes on a chronic course. In patients with sinusitis and benign nasal cavity (NC) and paranasal sinus (PNS) tumors, the microflora differs from the microbial landscape in primary maxillary sinusitis. Furthermore, the composition of the microflora changes as the tumor grows, due to the gradual obstruction of natural ostia in the paranasal sinuses [5].

During the last period, numerous studies have been published on the diagnosis and treatment of benign neoplasms of the nose and paranasal sinuses. However, there is insufficient scientific literature dedicated to the diagnosis and treatment of sinusitis in benign neoplasms of the nose and paranasal sinuses [4]. Early recognition and successful treatment of patients with benign tumors of the nasal cavity and accessory sinuses have important clinical and social significance. Therefore, the development and improvement of existing diagnostic methods for tumors are at the forefront of attention for otolaryngologists [6].

As a rule, in the presence of the aforementioned factors, the disease takes on a chronic course [8]. In patients with sinusitis and benign tumors of the nasal cavity (NC) and paranasal sinuses (PNS), the character of the microflora differs from the microbial landscape in primary sinusitis. Moreover, the composition of the microflora changes as the tumor grows due to the gradual obstruction of natural ostia in the PNS [1, 9, 10]. All of the above confirms the unquestionable interest in studying the microflora in patients with sinusitis and benign tumors of the NC and PNS.

The aim of the study was to investigate the features of the microflora in patients with chronic sinusitis and benign tumors of the NC and PNS, depending on the type of infectious agent and tumor spread.

Material and methods. The study included 38 patients with sinusitis and benign tumors of the NC and PNS, aged 11 to 60 years and older. Of these, 22 (57.9%) were male and 16 (42.1%) were female. The patients were examined at the ENT department of SamMI clinic from 2015 to 2018. Bacteriological examination was performed for all patients. The material for analysis was taken during diagnostic puncture and probing of the PNS ostium, as well as intraoperatively.

Results and discussion. Localization of benign tumors in the PNS was found in 11 patients (28.9%), in the NC in 6 patients (15.8%), and in the NC with extension into the PNS in 21 patients (55.3%). The distribution of tumors by stages was as follows: stage I was observed in 3 patients (10.7%), stage II in 6 patients (21.4%), and stage III in 19 patients (67.8%). Therefore, upon admission, the majority of patients had stage III tumor spread. Analysis of the data showed that papillomas (43.3%) and hemangiomas (36.6%) were more common in all age groups, while adenomas (13.2%) and osteomas (6.9%) were less common.

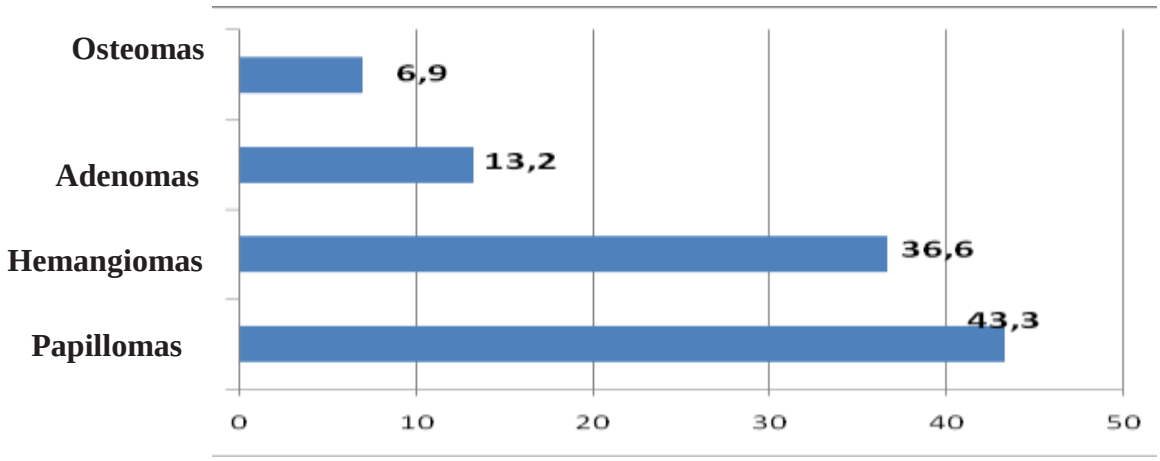

Fig.1 Distribution of benign tumors

Sinusitis with benign tumors of the nasal cavity and paranasal sinuses is characterized by unilateral nasal obstruction, nasal discharge, loss of smell, nosebleeds, and headaches. The results of bacteriological examination were positive in 23 (60.5%) patients with sinusitis and benign tumors of the paranasal sinuses and nasal cavity.

We studied the species composition of the microflora in patients with sinusitis and benign tumors of the paranasal sinuses and nasal cavity, comparing it with the extent of tumor spread.

Composition of microflora isolated in monoculture with different stages of tumor process spread

Selected cultures	1st degree	2-degree	3-degree
Haemophilus influenzae	1	-	-
Staph. Aureus	_	1	111
Staph. Epidermidis	_	1	2
Str. Pyogenus	-	2	2
E.coli	-	1	1
Proteus vulgaris	-	-	2
Klebsiella	-	-	1
Enterococcus	-	-	2
Pseudomonasauregino sa	-	-	1

Candida albicans	1	1	2
Actinomycetis	-	-	2
Bacterioides	-	2	9
Fusobacterium	1	2	7
Peptococcus	-	-	5

For example, in cases of tumor spread stage I, the microflora was limited to Haemophilus influenzae (4.3%). It is important to note that this is the least common group among the patients we examined with benign tumors of the paranasal sinuses and nasal cavity.

In cases of tumor spread stage II, aerobic flora predominated with staphylococci: Staph. aureus, Staph. epidermidis, and Str. pyogenes in 2 (8.7%) patients, anaerobic flora was isolated in 4 (17.3%) patients, and associations of Staph. epidermidis with Candida fungi were found in 3 (13%) patients. A wide variety of microflora was isolated in patients with tumor spread stage III.

In cases of tumor spread stage III, various aerobic cultures were isolated: Staph. aureus (4 cases, 17.3%), Staph. epidermidis, Str. pyogenes, E. coli, Klebsiella, Proteus vulgaris (2 cases, 8.7%), Enterococcus (1 case, 4.3%). Candida and Actinomycetes fungi were found in 2 cases each (17.3%). Anaerobes such as Bacteroides, Fusobacterium, Peptococcus accounted for an average of 30.4% of cases. Microorganism associations were also common (21.7%) and were represented by various combinations of gram-positive and gram-negative microorganisms with anaerobes and fungi.

Conclusion. Thus, it can be stated that patients with sinusitis and benign tumors of the nasal cavity and paranasal sinuses predominantly have anaerobic flora, which is resistant to commonly used antibiotics in ENT practice, as well as fungi. The prevalence of anaerobes, fungi, and microorganism associations increases with the growth and spread of the tumor. These characteristics are associated with repeated courses of antibiotic therapy and increasing obstruction of natural drainage pathways due to tumor growth and stages of tumor spread.

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