



CAUSES OF PURULENT INFLAMMATORY DISEASES OF ENT ORGANS IN PATIENTS WITH DIABETES MELLITUS

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<https://doi.org/10.5281/zenodo.5774537>

ARTICLE INFO

Received: 01st December 2021

Accepted: 05th December 2021

Online: 10th December 2021

KEY WORDS

*diabetes mellitus,
rhinosinusitis, chronic
sinusitis*

ABSTRACT

The causative agents of purulent-inflammatory diseases of ENT organs in patients with diabetes mellitus were studied in 55 patients with diabetes mellitus and in 30 patients without diabetes mellitus. The patients' age ranged from 18 to 50 years. The severity of diabetes mellitus was defined as moderate. All patients underwent a complex of general clinical studies. Patients underwent etiotropic, anti-inflammatory, symptomatic therapy, correction of insulin therapy in accordance with the glycemic figures. The blood glucose level was determined by the glucose oxidase method.

*The causative agents of purulent-inflammatory diseases of the ENT organs against the background of diabetes mellitus are most often representatives of the saccharolytic microflora (*Staphylococcus aureus*, *enterobacteria*), fungi, as well as non-fermenting bacteria, *pseudomonas*. In this case, the spectrum of microorganisms in the focus of purulent inflammation directly depends on the level of glycemia.*

Relevance: Despite the huge number of conservative and surgical methods of treatment, purulent-inflammatory diseases of the ENT organs often take a chronic, protracted course, contributing to the onset of systemic inflammation syndrome and the development of severe life-threatening complications [1]. The purulent-inflammatory pathology of the ENT organs acquires particular importance in conditions of comorbidity with severe

somatic diseases, one of which is diabetes mellitus (DM). While a lot of studies have been devoted to the study of cardiovascular diseases, kidney and lower limb pathology in patients with diabetes, the state of the ENT organs in diabetes remains insufficiently studied [2,5].

In the structure of morbidity in ENT pathology, the leading place belongs to acute sinusitis (5–10%), which ranks fifth in the number of prescribed antibacterial drugs in the structure of general



pyoinflammatory diseases [3,6]. Often, acute inflammatory diseases of the nose and paranasal sinuses become chronic and are characterized by a sluggish, prolonged course, which worsens the quality of life. This is due to both a change in the virulence and resistance of microflora, which is an etiological factor in the onset of sinusitis, and a decrease in the body's immunological reactivity. According to the American NHIS epidemiological study, the prevalence of chronic sinusitis among patients with diabetes mellitus (DM) aged 18-44 is 28.4% (34% in DM 1 and 25% in DM 2) compared with 18.4% among the rest population of the same age [4]. The problem of sinusitis is closely related to bronchopulmonary pathology, allergization of the body and changes in local and humoral immunity [3,7].

Especially severe rhinosinusitis occurs against the background of diabetes, patients have a significantly reduced ability to work and worsening quality of life, longer treatment periods, these patients are characterized by involvement in the inflammatory process of the orbit and cranial cavity, damage to the vessels of the mucous membrane of the paranasal sinuses [3,8].

The high prevalence of inflammatory diseases of the ENT organs and diabetes mellitus suggests the likelihood of a combination of these pathologies in patients being treated by an otolaryngologist and an endocrinologist. According to A.I. Muminov, pathology of ENT organs occurs in 59% of patients with diabetes. This is confirmed by numerous publications of the last decade [2,9]. In this regard, it is not surprising that often the diagnosis of this disease is first established by an otorhinolaryngologist. In

the domestic and foreign literature, information on the unusual course of rhinosinusitis in persons with diabetes is limited to the description of individual clinical cases [6, 7].

Purpose of the study. In view of the above, the purpose of this work was to investigate the microbial composition of biocenoses of the ENT organs, as well as the spectrum of causative agents of purulent-inflammatory diseases of the ENT organs in patients with diabetes mellitus.

Materials and methods. The causative agents of purulent-inflammatory diseases of ENT organs in patients with diabetes mellitus were studied in 55 patients with diabetes mellitus and in 30 patients without diabetes mellitus. The patients' age ranged from 18 to 50 years. All patients underwent a standard examination; clarification of complaints, collection of anamnesis of illness and life. Examination of ENT organs and microbiological research.

Results of the study. According to the results of a microbiological study, we found that most often in purulent-inflammatory diseases of the ENT organs against the background of diabetes, representatives of the saccharolytic transient microflora were found - *S. aureus* in 31% of cases, enterobacteria - in 10% of cases, and in addition, fungal microflora, which were sown in 9% of cases. In addition, it is necessary to note the high frequency of occurrence of *Pseudomonas aeruginosa*, which was sown in 15% of cases. This fact is due to the properties of the pathogen itself, which is undemanding to environmental factors and is adapted to exist in conditions of reduced specific and nonspecific resistance.



Studying the composition of microbial biocenoses of the ENT organs in patients with diabetes mellitus without inflammatory diseases of the ENT organs, we noted the predominance of transient opportunistic microflora (coagulase-negative staphylococci, enterobacteria, fungi), which is a kind of background for the onset and development of purulent infection, especially decompensation of diabetes mellitus.

When assessing the antibiotic sensitivity of the isolated microflora, the greatest resistance of bacteria was observed to tetracycline, lincomycin, benzylpenicillin and amoxicillin. The isolated microbes turned out to be the least resistant to the action of fluoroquinolones of the III-IV generations, macrolides, protected penicillins and cephalosporins of the III generation.

It should be noted that microorganisms isolated from patients with diabetes were more resistant to antibiotics than bacteria isolated from patients without diabetes. This is, apparently, due to the frequent use of antibacterial drugs in connection with various purulent diseases, to which this group of patients has a significant susceptibility. In addition, as a result of a microbiological study, we drew attention to a change in the spectrum of causative agents of purulent-inflammatory diseases of the ENT organs in patients with diabetes, depending on the degree of compensation for diabetes. Thus, during the decompensation of diabetes, *S. aureus*, enterobacteria and fungi predominated in the composition of the isolated microflora, and the proportion of obligate-anaerobic microflora also increased. It is characteristic that in such conditions, associations of 3 or

more microorganisms were sown more often.

Results of the analysis of the performed antibacterial therapy. At the prehospital stage of treatment, in most cases (62%) patients were prescribed unprotected aminopenicillins, much less often - in 25% of cases, patients received protected aminopenicillins with clavulanic acid. 9% of patients were prescribed second-generation fluoroquinolones and 4% of patients were prescribed third-generation cephalosporins. At the same time, a microbiological study with the determination of antibiotic susceptibility was not carried out. In a hospital setting, patients were most often prescribed natural penicillins (benzylpenicillin) - in 32% of cases, semisynthetic penicillins (oxacillin, ampicillin) - 28% of patients, II - III generation cephalosporins (cefazolin, cefotaxime, ceftriaxone) - in 24% of patients, as well as in combination with II-III generation cephalosporins - in 16% of cases.

Thus, β -lactam preparations played a significant role in the treatment of patients in the main group. In our opinion, this is not an optimal solution, since patients with diabetes mellitus have characteristic features associated with the pathogenesis of diabetes, which dictates the need for a specific approach to the prescription of any drug.

It is known that over time, microangiopathy in diabetic patients gradually leads to renal failure. In this regard, when choosing an antibacterial drug, it is necessary to take into account its pharmacokinetic properties and routes of excretion from the body. Also, when choosing an antibiotic, it is necessary to pay



attention not only to the spectrum of action, but also to additional, non-antimicrobial, properties of the drug.

Conclusion. Analyzing all of the above, we can conclude that the most optimal drugs for the treatment of purulent-inflammatory diseases of the ENT organs in patients with diabetes at the prehospital stage are modern macrolides and fluoroquinolones of III-IV generations. These drugs are effective against the putative causative agents of purulent inflammatory diseases of the ENT organs in patients with diabetes, and in addition, they have good pharmacokinetics, a proven immunomodulatory effect and high intracellular activity. For the treatment of complicated forms of pyoinflammatory diseases of the ENT organs in a hospital setting, it is advisable to use cephalosporins of the III - IV generations in combination with metronidazole, which actively affects the anaerobic microflora. Effective methods

of influencing the fungal microflora, which is often found in purulent-inflammatory diseases of the ENT organs in patients with diabetes, are the correction of the glycemic level in combination with the local use of fungicidal drugs (naftifine, nitrofungin, clotrimazole).

In the structure of normal biocenoses of the ENT - organs in patients with diabetes mellitus, a transient conditionally pathogenic microflora prevails. The causative agents of purulent-inflammatory diseases of the ENT organs against the background of diabetes mellitus are most often representatives of the saccharolytic microflora (*Staphylococcus aureus* - in 31% of cases, enterobacteria in 10% of cases), fungi (9% of cases), as well as non-fermenting bacteria (*pseudomonads*) - in 15 % of cases. In this case, the spectrum of microorganisms in the focus of purulent inflammation directly depends on the level of glycemia.

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