ETIOLOGICAL SIGNIFICANCE OF OPPORTUNISTIC MICROFLORA IN TONSILLITIS AND ITS SENSITIVITY TO ANTIBIOTICS

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Introduction. Acute and chronic bronchitis is one of the most common reasons for patients to seek medical help [1; 2]. Irrational use of antibiotics contributes to the spread of resistance of bacterial pathogens to antimicrobial drugs [3].

Effective treatment of tonsillitis of bacterial etiology is impossible without identifying the etiological factor. In the structure of etiologically significant agents, along with pathogenic microorganisms, representatives of the normal flora of the upper respiratory tract of the human body are increasingly found [4].

The aim of the study: to study the species composition of the microflora in tonsillitis, to determine the ecological role of different species in the structure of the microbiocenosis and analysis of antibiotic sensitivity of isolated strains.

Material and methods of research. The state of pharyngeal microbiocenosis in 43 patients with tonsillitis was studied. Isolation and identification of microorganisms were studied according to regulations [5].

Ecological analysis of microbiota was performed by determining the indicators: the Berger-Parker dominance index [6] and the constancy index [7].

Analysis of sensitivity of isolated strains of microorganisms to antibiotics was performed according to regulations [8].

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Results and discussion. As a result of the study, 7 species of bacteria, 1 species of fungi *C. albicans* and streptococci of the viridans group were isolated and identified. A total of 57 strains of microorganisms were identified, 82.5% of which were gram-positive cocci, namely 47.2% belonged to the genus Streptococcus, and 35.1% – Staphylococcus. Fungi *C. albicans* were isolated in 15.8% of cases. Among streptococci, the leading place was occupied by streptococci of viridans group (29.8%) and *S. anginosus* (10.5%). The most common representative of staphylococci was *S. aureus* (28.1%). The proportion of other streptococci ranged from 7.0% in *S. epidermidis* to 1.7% in *S. anhaemolyticus* and *S. mitis. S. pyogenes* was isolated in two patients (3.5%). *Pseudomonas aeruginosa* was identified in one patient (1.7%).

The analysis of the results revealed that 54.4% of strains are found in monoculture, 35.1% of strains formed two-component associations, and 10.5% were in combinations of three microorganisms. Regarding the species composition, streptococci of the viridans group were most often isolated in monoculture (64.7%) and in 35.5% – in two-component associations. *Staphylococcus aureus* was common both in monoculture (68.75%) and in two-component (18.75%) and three-component associations (12.5%). *C. albicans* was also isolated alone (44.5%), in two-component (33.3%) and three-component associations (22.2%). According to the authors [1–3], *S. viridans, S. aureus, S. pyogenus, S. anhaemolyticus, S. epidermidis* are isolated in associations in both acute and chronic tonsillitis. The analysis of ecological indexes revealed that streptococci of the viridans group (persistence index was 29.8%) and *S. aureus* (persistence index=28.1%) belong to the additional members of biocenosis, and all other microorganisms in the clinical material were random (persistence index was < 25%). According to the Berger-Parker index, the dominant role belonged to streptococci of the viridans group and *S. aureus.*

In the quantification of microorganisms, the highest level of contamination was determined in *S. anginosus* (7.33 + 0.84 lg CFU / ml) and *S. pyogenes* (5.0 + 0.0 lg CFU / ml). The level of colonization of *C. albicans* was 3.42 + 0.21 lg CFU / ml.

The study of bacterial susceptibility to antibiotics revealed the spread of resistant strains to a number of antibiotics. Thus, *S. aureus* was sensitive to oxacillin, ceftriaxone, ofloxacin, norfloxacin and gentamicin. Sensitivity to azithromycin was showed by 93.7% of strains and to lincomycin by 86.7%, only 37.5% of strains were sensitive to penicillin (Figure).

S. anginosus was sensitive to penicillin, amoxicillin, cefotoxime, ceftriaxone, clindamycin and lincomycin. The sensitivity of streptococcus to azithromycin was 83.3%, to levofloxacin – 80%, to amoxicillin – 66.7%.

S. pyogenes was resistant to oxacillin, amoxicillin, penicillin in half of the cases and sensitive to azithromycin and levofloxacin.

Thus, the detected microorganisms belong to the representatives of the normal oral microbiota, which in the normal state of the immune response (at natural concentrations) do not cause inflammatory processes [2]. However, when the immunity and balance of the microflora are disturbed, opportunistic microorganisms can cause inflammatory processes [9]. In addition, bacteria are able to form biofilms on the surface of the tonsils, which is one of the reasons for the development of tonsillitis and the formation of resistance to antibiotics [10; 11].

Conclusions. At tonsillitis opportunistic microorganisms, representatives of normal microflora, are isolated both in monoculture, and in associations. At excess of operating criteria of level of microbic contamination they can take part in development of inflammatory processes. There is a spread of resistance to penicillin and lincomycin in *S. aureus* also to amoxicillin, azithromycin, levofloxacin in *S. anginosus* and to oxacillin, amoxicillin, penicillin in *S. pyogenes*.

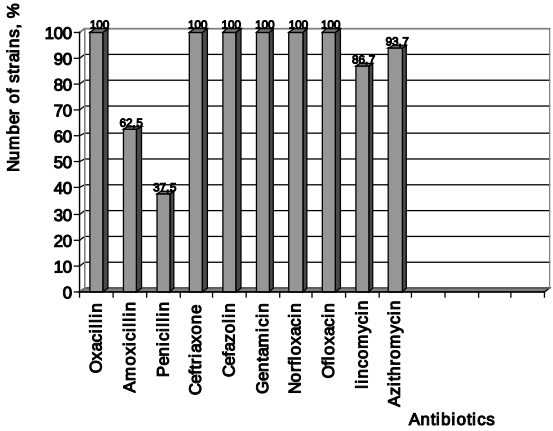

Figure. Susceptibility to antibiotics of S. aureus strains isolated from patients with tonsillitis, as a percentage

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