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THE METHOD OF DETERMINING THE ETIOLOGICAL STRUCTURE OF THE CAUSES OF ACUTE AND CHRONIC HAYMORITIS

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✓ ***Resume***

From the biological material (pus) of children with purulent sinusitis, "positive bacteriological result" was recorded in 93.1% of cases, monoculture in 33.1% of cases, association of microorganisms in 66.9% of cases (2-3 pathogens).

Keywords:ethmoiditis, frontitis, sphenoiditis

МЕТОД ОПРЕДЕЛЕНИЯ ЭТИОЛОГИЧЕСКОЙ СТРУКТУРЫ ПРИЧИН ОСТРОГО И ХРОНИЧЕСКОГО ГАЙМОРИТА

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✓ ***Резюме***

Из биологического материала (гноя) детей с гнойным синуситом «положительный бактериологический результат» регистрировали в 93,1% случаев, монокультуру в 33,1% случаев, ассоциацию микроорганизмов в 66,9% случаев (2-3 возбудителя).

Ключевые слова: этмоидит, фронтит, сфеноидит

ЎТКИР ВА СУРУНКАЛИ ГАЙМОРИТ КЎЗҒАТУВЧИЛАРИНИНГ ЭТИОЛОГИК ТУЗИЛИШИНИ АНИҚЛАШНИНГ УСЛУБИЯТИ

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✓ ***Резюме***

Йирингли гайморит билан касалланган болаларнинг биологик материалидан (йиринг) 93,1% ҳолларда “ижобий бактериологик натижа” қайд этилган, 33,1% ҳолларда монокультура, 66,9% ассоциация микроорганизмларнинг олинганлиги аниқланди (2-3 патоген).

Калит сўзлар: этмоидит, фронтит, сфеноидит

Relevance

Purulent-inflammatory diseases of the paranasal sinuses remain one of the urgent problems of modern otorhinolaryngology. One of the cases showing the prevalence of this pathology is that 15-36% of patients treated in otorhinolaryngology departments have acute and chronic sinusitis [5,4].

It is known that the purulent-inflammatory process can develop in all adjacent cavities of the nose. The leading position is the maxillary cavity (hymoritis), followed by the spongy cavity, the frontal bone

cavity, the poniform bone cavity. Such a sequence is mainly observed in children and adult patients over 7 years old, ethmoiditis is observed in 80-92% of cases in children under 3 years old, and joint inflammation of sinusoidal and temporal cavities is common in children aged 3 to 7 years old [2,3,4].

Similar cases also occur in adults, if all adjacent spaces on one side are affected, the term "hemisinusitis" is used, and if it is observed on both sides, the term "pansinusitis" is used [1,4,6,7].

Purpose of the study: Development of a method for determining the etiological structure of the causes of acute and chronic insinitis

Materials and styles

To achieve this goal, 130 patients under the age of 15 were studied in children. Of the total examined contingent, 69 (53.1 ± 4.4%) were boys and 61 (46.9 ± 4.4%) were girls. Among them, 98 (75.4 ± 3.8%) are rural residents, 32 (24.6 ± 3.8%) are urban residents. The age distribution of patients was as follows: from 0 to 6 years - 39 (30.0 ± 4.0%) children; From 7 to 15 years - 91 (70.0 ± 4.0%) children.

They are divided into two representative (representative) groups:

Group 1 (main) - 95 children with chronic sinusitis;

Group 2 (comparison group) - 35 children with acute sinusitis.

Clinical and microbiological studies were conducted in surgical practice - before surgery, 3, 7 and 14 days after surgery.

All patients were diagnosed with clinical, instrumental, bacteriological and other laboratory methods according to International Statistical Classification of Diseases and Related Health Problems 10 th Revision Version for (2007). checked.

Result and discussion

Collection of biological material (pus from a pathological focus) and its delivery to a bacteriological laboratory is carried out using traditional methods. Identification and differentiation of pathogens was carried out according to Bergey's Manual Systematic Bacteriology (Bergey's Manual Systematic Bacteriology) [2]. Interspecific and intraspecific identification of cultures was based on the identification of their main taxonomic characters. Pathogens of etiological significance were cultured at a concentration of more than 104-105 CFU/ml. Commercial culture tools of "HiMedia" (India) were used.

The disco-diffusion method was used to study resistance to antimicrobial drugs [3]. The essence of the method is based on the extinction of the studied culture germination at a concentration of 1.5x108 mkg/ml in the zone of the concentration of the antibacterial drug above the minimum inhibitory concentration by diffusion of the antibacterial drug in the carrier (paper disk) into the dense nutrient medium (Muller-Hinton medium). The density of the inoculum (suspension of the studied microorganisms) was set to 0.5 Mac Farland (according to the turbidity standard) and used within 15 minutes after preparation. The agar was plated on 4-mm-layered Petri dishes (with 20 ml of agar per 90-mm-diameter Petri dish) and used immediately. Standard inoculum was pipetted into Petri dishes with 2 mL of nutrient medium. We used standardized commercial discs from HiMedia (India). Vials with discs were removed from the refrigerator 1 hour before the start of work.

Susceptible (S), conditional-resistant (SR) and resistant (R) strains were evaluated depending on the germination diameter in the culture medium.

Interpretation of results was studied separately for Staphylococcus spr., Streptococcus spp., Pseudomonas aeruginosae, Enterobacteriaceae family. Depending on the diameter (mm) of the growth zone corresponding to different antibiotics for each pathogen, it was done according to the recommendations [5].

The level of resistance to microorganisms of "paper discs" impregnated with the following antibiotics, which are widely used in otorhinolaryngological practice today, was studied and evaluated in the research work: amoxiclav, ampiox, gentamicin, doxacillin, kanamycin, levomycetin, tetracycline, cefazolin, ciprofloxacin, ceftriaxone, cefoperazone, erythromycin - a total of 12 ta.

In evaluating the results of the study, the indicators of the normal microflora in the clinical sample were taken into account. The identification of strains that do not belong to the normal microflora of the upper respiratory tract, as well as the identification of any type of unusually large number of microorganisms, was considered etiologically significant.

Interpretation of the results in chronic sinusitis was more difficult when the association of microorganisms was cultured. In such cases, the quantitative assessment of the growth of various types of microorganisms from the association was carried out during the primary inoculation of the pathological material in the nutrient medium. The dominant type was given a leading place in the etiology of the disease.

Statistical processing of the obtained material was carried out by the method of variational statistics on a personal computer based on "Pentium IV" processors with the help of biomedical research programs. The principles of evidence-based medicine were used in the organization and conduct of the study. Research results and discussion. It was found that "negative bacteriological result" was recorded in 6.9 ± 2.2% (n = 9) cases, and "positive bacteriological result" was recorded in 93.1 ± 2.2% (n = 121) cases. It should be noted that in 33.1 ± 4.3% (n = 40) cases a monoculture of the pathogen and in 66.9 ± 4.3% (n = 81) cases a collection of microorganisms (mostly 2-3 pathogens) were obtained.

Before surgery, the results of planting etiological agents from the material of children with chronic sinusitis and acute sinusitis (n = 121) were shown (Fig. 1):

Streptococcusviridance- 21.5±3.7% (n=26);
Staphylococcus aureus- 19.0±3.6% (n=23);
Staphylococcus epidermidis- 16.5±3.4% (n=20);
Pseudomonas aeruginosa- 15.7±3.3% (n=19);
Escherichia coli- 13.2±3.1% (n=16);
Enterococcus spp- 5.8±2.1% (n=7);
Proteus spp- 5.0±2.0% (n=6);
Staphylococcus haemolyticus- 1.7±1.2% (n=2);
Staphylococcus saprophyticus- 1.7±1.2% (n=2).

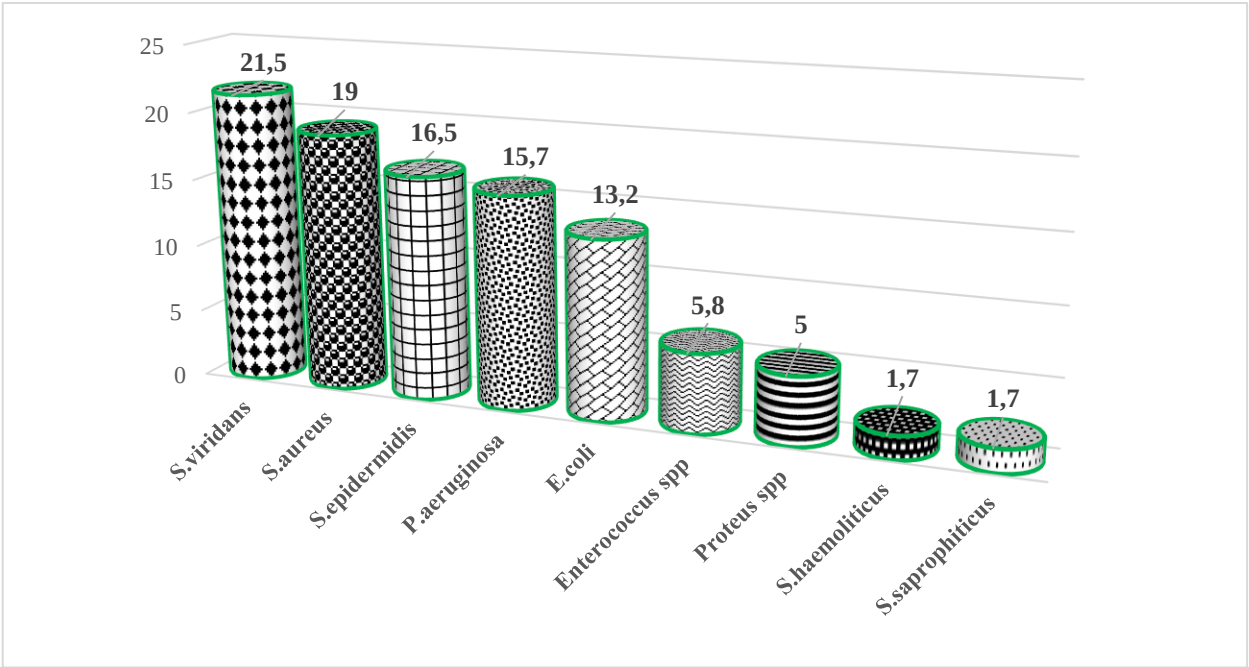

Figure 1. Comparative indicators of the etiological structure of the causative agents of acute and chronic sinusitis in children before treatment,%

In 88 out of 95 cases (92.6 ± 2.7%) with chronic sinusitis in sick children, as well as in 33 out of 35 cases (94.3 ± 3.9%) in acute sinusitis, an increase in pathogens was noted.

The microbial landscape of chronic sinusitis is represented by (n = 88) strains, mainly Pseudomonas aeruginosa (19.3 ± 4.2%, n = 17), Escherichia coli (13.6 ± 3.7%, n = 12), Staphylococcus aureus (11.4±3.4%, n=10), Streptococcus viridans (10.2±3.2%, n=9), Staphylococcus epidermidis (10.2±3.2%, n=9) and others .

In contrast to chronic sinusitis (comparison group), gram-positive microflora prevailed in acute sinusitis, and the spectrum of pathogens was significantly less (P < 0.05). Also, it was found that the

dynamic indicators of bacterial contamination (pollution) were characterized by a partial change in the species composition of pathogens in the postoperative bush in both taxonomic groups.

It was found that only 7 cases (7.3 ± 2.7%) of chronic sinusitis and 2 cases (5.7 ± 3.9%) of acute sinusitis had a "negative bacteriological result" before surgery and negative growth 3 days after surgery. were 43.1 ± 5.1% (n = 41) and 40.0 ± 8.3% (n = 14), respectively. This indicates successful treatment measures in children in both groups (P < 0.05).

In the dynamics of the study, according to the rate of Staphylococcus aureus cultivation in chronic sinusitis, indicators were obtained:

before surgery - 11.4±3.4% (n=10);

on the 3rd day after surgery - 13.6±3.7% (n=12);

on the 7th day after surgery - 11.4±3.4% (n=10);

on the 14th day after surgery - 9.1±3.1% (n=8).

According to the rate of cultivation of Staphylococcus aureus in acute sinusitis in children, slightly different indicators were obtained - respectively, during the same study period:

before surgery - 39.3±8.5% (n=13);

on the 3rd day after surgery - 24.2±7.5% (n=8);

on the 7th day after surgery - 21.2±7.1% (n=7);

on the 14th day after surgery - 12.1±5.7% (n=4).

The comparative analysis showed that there were no significant changes between the indicators of research dynamics in sick children of group 1 (main group) (before surgery, on the 3rd, 7th and 14th days after surgery) - P> 0.05, in group 2 (comparison group) it was the same noted statistically significant differences between indicators in dynamics during the study period (P < 0.05 - P < 0.001).

The culture rate of Streptococcus viridans in group 1 was not significantly different from the percentage of germination of Staphylococcus aureus, and in sick children in group 2, a significantly higher culture rate of Staphylococcus aureus than Streptococcus viridans was noted (P < 0.05).

Similar results were obtained regarding the degree of cultivation of Staphylococcus epidermidis in sick children and the dynamics of treatment. We did not identify any significant differences for this indicator, and the postoperative seeding rate did not have a significant trend to decrease or increase (P>0.05).

In the study of the sensitivity of cultivated strains of pathogens to antibacterial drugs, low sensitivity of strains of Staphylococcus aureus, Streptococcus viridans, Staphylococcus epidermidis (n = 69) to unprotected penicillins (S=17.4±4.6%, n=12) was found, high sensitivity was determined for cephalosporins of different generations (S = 76.8 ± 5.1%, n = 53 to S = 95.7 ± 2.4%, n = 66), all strains of these pathogens (S = 100%, n = 69) were sensitive to amoxiclav.

The obtained results show that coagulase-negative staphylococci (CNS) do not have a specific effect on maintaining the acute inflammatory process (acute sinusitis) in children, but in the chronic inflammatory process (chronic sinusitis) Staphylococcus aureus takes the main place, there are no significant differences between CSC and Staphylococcus aureus (P > 0.05).

It is known that on the 14th day after the operation, only representatives of the normal microflora of the upper respiratory tract were vaccinated in 29.5 ± 4.7% of cases (n = 28) in the children of the main group (n = 95), and this trend was not observed in the comparison group.

Ungan Staphylococcus aureus strains cefazolin (S=81.0±7.4%), ciprofloxacin (S=71.4±7.1%), ceftriaxone (S=71.4±7.1%), cefoperazone (S= 71.4±7.1%), showed high sensitivity to antibiotics such as amoxiclav (S=71.4±7.1%). These strains are resistant to tetracycline (S=4.8±3.1%), gentamicin (S=19.1±4.3%), chloramphenicol (S=19.1±4.3%), doxacillin (S=33, 3±5.6%), ampiox (S=33.3±5.6%), erythromycin (S=42.9±5.9%) and kanamycins (S=42.9±5.9%) are lower showed sensitivity.

*Staphylococcus epidermidis*The results were similar to the results of Staphylococcus aureus in terms of antibiotic resistance, only the level of resistance was lower.

*Staphylococcus epidermidis*cefazolin (S=100.0%), ciprofloxacin (S=93.8±7.2%), ceftriaxone (S=93.8±7.2%), cefoperazone (S=81.3±6.7%) and showed high sensitivity to antibiotics such as amoxiclav (S=75.0±5.2%). The level of resistance (R) of Staphylococcus epidermidis was lower than that of Staphylococcus aureus, for example, this parameter for tetracycline was R=75.0±5.2%, for gentamicin R=68.8±4.9%, for chloramphenicol R= 68.8±4.9%, R=62.5±4.7% for doxacillin, R=62.5±4.7% for ampoix, 50.0±4.2% for erythromycin and R= It was 50.0±4.2%.

*Streptococcus spp*was very similar to Staphylococcus aureus and Staphylococcus epidermidis. Therefore, we did not repeat the antibiotics and their sensitivity percentages.

*Pseudomonas aeruginosa*was found to have a high level of resistance to antibiotics. Only cefazolin (R=26.3±3.3%), cefaperazone (R=26.3±3.3%), ceftriaxone (R=31.6±3.6%), ciprofloxacin (R=42, 1±3.9%) is excluded, because low resistance to them was found. The percentage of resistance to the remaining antibiotics (n=8) was high (from R=57.9±4.6% to R=94.7±6.3%).

*Enterobacteriaceae*while the percentage of high resistance of members of the family was R=44.4±6.8% (erythromycin and levomycetin), the lowest resistance was to cefaperazone (R=11.1±7.7%) and ceftriaxone (R=11.1±7, 7%) was. The results obtained for cefazolin (R=11.1±7.7%) and ciprofloxacin (R=11.1±7.7%) were also the same.

Conclusion

The percentages of resistance (R) to the studied antibiotics are convincingly lower than those of Staphylococcus aureus and Staphylococcus epidermidis. It has been proven that cefoperazone, ceftriaxone, cefazolin, ciprofloxacin are included in low-resistance antibiotics of Enterobacteriaceae family.

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