OROPHARYNGEAL MICROBIOTA IN CHILDREN WITH WEB INFECTION ON THE BACKGROUND OF ANTIBIOTIC THERAPY

Summary. According to statistics from the World Health Organization, infectious mononucleosis caused by Epstein-Barr virus affects 90% of the world's population. The aim of this study was to study the composition of the oropharyngeal microbiota and to determine the antibiotic sensitivity of its representatives, which are released in clinically significant concentrations from children with WEB infection who received antibiotic therapy. 28 patients with WEB infection in children aged 5 to 16 years were examined. Among the 28 children in inpatient treatment, 78.6% were patients under the age of 10. All children received antibiotic therapy, although according to treatment protocols, it is indicated only in the case of a bacterial infection.

Streptococcus spp. with β-hemolysis (64.3%). Detection of S. aureus in 35.7% of patients indicates a violation of the structure of the normal microbiocenosis of the oropharynx. The study of antibiotic susceptibility of staphylococci and streptococci showed the presence of resistance in 52.6% of isolated strains of streptococci and 25.0% of staphylococci to azithromycin.
Introduction. Epstein-Barr virus (WEB) is ubiquitous. In developing countries, almost every child over the age of 5 has serum antibodies. In developed countries, the infection is less common, but still 50% of high school graduates detect antibodies, and by the age of 40 - in 90% of the population.

At an early age, the infection is accompanied by erased manifestations, or it is asymptomatic. Primary infection in adolescence or older causes a symptom complex known as infectious mononucleosis, much less often a chronic persistence of the virus known as reactivated chronic WEB infection[3].

The condition is manifested by polymorphism of symptoms and is quite rare, among them often there is a syndrome of chronic mononucleosis, accompanied by complaints of persistent weakness in the presence or absence of any changes in laboratory parameters. Chronic active WEB infection is characteristic of immunodeficient patients (most often AIDS and transplant recipients).

It is most often manifested by progressive lymphoproliferative disease or CNS lymphomas. The ability of the pathogen to cause malignant transformation of cells suggests the participation of the virus as a carcinogen in the development of malignant neoplasms such as African forms of Burkitt's lymphoma, nasopharyngeal carcinoma in men of some ethnic groups in South China, and Kaposi's sarcoma in AIDS patients.

According to statistics from the World Health Organization, infectious mononucleosis caused by Epstein-Barr virus affects 90% of the world's population. The highest incidence of mononucleosis is observed among children 3-9 years.

The main danger of this infection is that after the disease the child has a long-term violation of the immune system, and it becomes susceptible to a variety of microorganisms - bacteria, viruses, fungi, which can cause many infectious complications.

The aim of this study was to study the composition of the oropharyngeal microbiota and to determine the antibiotic sensitivity of some of its representatives, which are released in clinically significant concentrations from children with WEB infection who received antibiotic therapy, to prevent antibiotic resistance in such patients and effective treatment of bacteria. such will occur in the further course of the disease.

Materials and methods of research. With the consent of parents, 28 patients with WEB infection in children aged 5 to 16 years were examined. All patients on the basis of a set of clinical and laboratory studies were diagnosed with: WEB infection, typical form, moderate course. The etiology of the diagnosis was verified by PCR test for virus DNA and ELISA to determine the level of specific Ig M.

Microbiological examination of oropharyngeal swabs was performed by the classical bacteriological method with dosed seeding of suspended material on differential diagnostic media and generic identification by morphological, cultural, biochemical properties.

Kirby-Bauer method was used to study the antibiotic susceptibility of isolated pure cultures. The results were evaluated by determining the diameters of the growth retardation zones using standard tables [1].

In addition, the medical histories of these patients were processed in order to determine the features of antibiotic therapy, which was carried out during inpatient treatment. The results of the study are processed according to the general rules of variation statistics using a standard set of programs for a personal computer.

Research results and their discussion. All 28 children were hospitalized in the diagnostic department of Ternopil Regional Children's Clinical Hospital. A significant proportion were patients under the age of 10 years - 22 (78, 6%), which coincides with the literature on the maximum level of WEB infection in this age group [2]. All children received antibiotic therapy, although according to treatment protocols and recommendations of leading experts, antibacterial therapy is indicated only in the case of joining a bacterial infection [5,6].

This therapeutic practice can be explained by the difficulty of diagnosis at the prehospital stage, and the lack of results of serological testing. However, given the fact that all children had WEB infection, typical form, moderate course, it is difficult to justify the
appointment of 42.9% of patients with a combination of two antibacterial drugs, usually a group of third-generation cephalosporins and macrolides. The results of microbiological examination of the material from the oropharynx indicate the effect of antibiotics on the composition and number of microorganisms of this biotopes: S. epidermidis was found in two children (7.1%).

The structure of the oropharyngeal microbiome in children with WEB infection receiving antibiotic therapy

<table>
<thead>
<tr>
<th>№</th>
<th>Microorganism</th>
<th>Absolute number of strains</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>S. aureus</em></td>
<td>10</td>
<td>35.7</td>
</tr>
<tr>
<td>2</td>
<td>Streptococcus spp. with α-hemolysis</td>
<td>12</td>
<td>42.9</td>
</tr>
<tr>
<td>3</td>
<td>Streptococcus spp. with β-hemolysis</td>
<td>18</td>
<td>64.3</td>
</tr>
<tr>
<td>4</td>
<td>Streptococcus spp. with γ-hemolysis</td>
<td>8</td>
<td>28.6</td>
</tr>
<tr>
<td>5</td>
<td><em>E.coli</em></td>
<td>4</td>
<td>14.3</td>
</tr>
<tr>
<td>6</td>
<td><em>Candida spp.</em></td>
<td>6</td>
<td>21.4</td>
</tr>
<tr>
<td>7</td>
<td><em>Neisseria spp.</em></td>
<td>2</td>
<td>7.1</td>
</tr>
<tr>
<td>8</td>
<td><em>Moraxella spp.</em></td>
<td>6</td>
<td>21.4</td>
</tr>
<tr>
<td>9</td>
<td><em>Enterococcus spp.</em></td>
<td>2</td>
<td>7.1</td>
</tr>
<tr>
<td>10</td>
<td><em>Micrococcus spp.</em></td>
<td>4</td>
<td>14.3</td>
</tr>
<tr>
<td>11</td>
<td><em>Enterobacter spp.</em></td>
<td>2</td>
<td>7.1</td>
</tr>
<tr>
<td>12</td>
<td><em>S. epidermidis</em></td>
<td>2</td>
<td>7.1</td>
</tr>
<tr>
<td>13</td>
<td><em>S. saprophyticus</em></td>
<td>4</td>
<td>14.3</td>
</tr>
</tbody>
</table>

Since the most commonly used antibacterial drugs prescribed to children with WEB infection were macrolides and cephalosporins, and the most common representatives of the oropharyngeal microbiota, which were sown from this group of patients on the background of antibiotic therapy were staphylococci and streptococci, namely: macrolides: erythromycin and azithromycin; cephalosporins: ceftriaxone, cephalaxin. Thus, 10 (52.6%) isolated strains of staphylococci were resistant to azithromycin, there were no moderately resistant and sensitive strains; among staphylococci - 2 (25.0%) were sensitive and 4 (50.0%) moderately resistant. Accordingly, every fourth strain of staphylococci was resistant to azithromycin. 2 (10.5%) moderately resistant strains of streptococci were detected for erythromycin, but 6 (75.0%) susceptible staphylococci, resistant and moderately resistant were not.

There were 4 (20.0%) resistant streptococci to ceftriaxone and no resistant staphylococci. 8 (40.0%) strains of streptococci were resistant to cephalaxin and every fourth strain of staphylococci was also resistant.

It is noteworthy that both staphylococci and streptococci are representatives of the normal oropharyngeal microbiota, but the development of antibiotic resistance in them is a prognostically unfavorable sign, as it can cause infectious processes in children weakened by viral infection.

In addition, staphylococci, in particular *S. aureus*, can colonize the oropharynx of children with WEB infection as a result of nosocomial infection, suggesting their resistance to mutations in the relevant genes or plasmids.

It is known that members of this genus are characterized by a high level of natural sensitivity to antibacterial drugs (beta-lactams, aminoglycodies, fluoroquinolones, macrolides, lincosamides, glycopeptides, rifampicin, etc.). However, in some cases, the treatment of staphylococcal infection becomes a serious problem, which is associated with the formation of antibiotic resistance. In the conditions of modern methods of struggle against a staphylococcal infection the problem of resistance to antibacterial drugs appears rather sharply. In recent years, the value of *S. aureus* has increased not so much due to their widespread use, but due to their resistance to antibiotics [4].

Conclusion. Streptococcus spp. with β-hemolysis (64.3%), and this group includes the maximum number of species that cause disease in humans. The appearance of Enterobacter spp., *E. coli* and an increase in the number of fungi of the genus Candida is an indicator of a decrease in the level of colonization resistance of this biotopes.

Detection of *S. aureus* in 35.7% of patients indicates a violation of the structure of the normal microbiocenosis of the oropharynx, which is a consequence of unreasonable appointment of massive antibiotic therapy. The study of antibiotic susceptibility of staphylococci and streptococci showed resistance in 52.6% of isolated strains of streptococci and 25.0% of staphylococci to azithromycin, in addition, streptococci in 20.0% were resistant to ceftriaxone and 40.0% to cephalaxin.

 ANALYSIS OF THE COURSE OF INFILTRATIVE PULMONARY TUBERCULOSIS IN WOMEN

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Abstract. The article presents a comparative analysis of the course of infiltrative pulmonary tuberculosis in women and men, based on the analysis of the case histories of 58 patients who were in inpatient treatment in the department of respiratory tuberculosis of the Republic Scientific Centre “Phthisiology” in 2018. All patients showed symptoms of intoxication, different intensity. Upon admission, males complained of weakness in 24% of cases, women - in 21%. It should be noted that sweating occurred in 14% in women and 3% in men, weight loss was observed in 14% of male patients, women lost weight in 7% of cases. When considering the prevalence of the tuberculosis process, it was revealed that the process in most patients was widespread, since it was localized in 1 segment - 48% in men and 38% in women, in 2 segments - 45% and 52%, respectively. It should also be noted that lesions of an entire lobe of the lung were observed in 5 men and 7 women, however, despite this, it is noted that clinical-radiological improvement occurred in women faster than in men.

АНАЛИЗ ТЕЧЕНИЯ ИНФИЛЬТРАТИВНОГО ТУБЕРКУЛЕЗА ЛЕГКИХ У ЖЕНЩИН


Abstract. The article presents a comparative analysis of the course of infiltrative pulmonary tuberculosis in women and men, based on the analysis of the case histories of 58 patients who were in inpatient treatment in the department of respiratory tuberculosis of the Republic Scientific Centre “Phthisiology” in 2018. All patients showed symptoms of intoxication, different intensity. Upon admission, males complained of weakness in 24% of cases, women - in 21%. It should be noted that sweating occurred in 14% in women and 3% in men, weight loss was observed in 14% of male patients, women lost weight in 7% of cases. When considering the prevalence of the tuberculosis process, it was revealed that the process in most patients was widespread, since it was localized in 1 segment - 48% in men and 38% in women, in 2 segments - 45% and 52%, respectively. It should also be noted that lesions of an entire lobe of the lung were observed in 5 men and 7 women, however, despite this, it is noted that clinical-radiological improvement occurred in women faster than in men.

Аннотация. В статье представлен сравнительный анализ течения инфильтративного туберкулеза легких у женщин и мужчин, основанный на анализе историй болезни 58 пациентов, находившихся на стационарном лечении в отделении туберкулеза органов дыхания Республиканского научного центра "Фтизиатрия" в 2018 году. У всех пациентов отмечались симптомы интоксикации, различной интенсивности. При поступлении у мужчин жаловались на слабость в 24% случаев, женщины - в 21%. Следует отметить, что потливость имела место у 14% женщин и 3% мужчин, потеря веса наблюдалась у 14% пациентов мужского пола, женщины похудели в 7% случаев. При рассмотрении распространенности туберкулезного процесса было выявлено, что процесс у большинства пациентов был распространенным,