EPIDEMIOLOGICALLY SIGNIFICANT RISK FACTORS FOR THE DEVELOPMENT OF PNEUMOCOCCAL MENINGITIS/MENINGOENCEPHALITIS IN ADULTS

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Abstract. Among those hospitalized with a diagnosis of "bacterial meningitis". The leading role in the etiology of the disease belonged to Streptococcus pneumoniae (55.2%). In other cases, there was damage to the meninges by Staphylococcus aureus, Streptococcus spp, fungi of the genus Candida spp., E. coli, Neisseria meningitidis, Cryptococcus spp., some bacteria were found in association with other types of bacteria or viruses, in 7.8% the pathogen could not be identified. Microbiological diagnostics of bacterial meningitis requires the use of a set of methods, including not only microscopic, bacteriological and serological examination (latex agglutination), but also PCR detection of pathogenic microorganisms in the cerebrospinal fluid, the diagnostic value of which is 46.4%.

Keywords: bacterial meningitis, method, pneumococcal meningitis.

INTRODUCTION

Bacterial purulent meningitis is a severe disease that develops as a result of an infectious agent overcoming the blood-brain barrier. The pia mater of the base of the brain and the upper part of the spinal cord are involved in the infectious process, and the vascular plexuses in the ventricular region are also affected, forming foci of purulent inflammation. Among the clinical manifestations of bacterial purulent meningitis, symptoms of intoxication, general cerebral, meningeal and other signs of damage to the nervous system predominate. According to the results of studies by foreign and domestic authors, over the past

thirty years, a significant decrease in the incidence of meningococcal infection has been noted, in contrast to bacterial meningitis of non-meningococcal etiology.

MATERIALS AND METHODS

The highest incidence rate of pneumococcal meningitis is recorded in children of the younger age group (0 to 4 years) and is 10 per 100 thousand children. Among the adult population, this indicator is lower - 1-2.5 per 100 thousand population per year, with the maximum incidence in the age group from 45 to 64 years. The detection of pneumococcus increased from 11.5 to 55.2%. Mortality from pneumococcal meningitis reaches 30%. Men get sick more often than women [2-4]. In the hospital, a system for determining pathogen antigens in the cerebrospinal fluid using the latex agglutination method (Slidex pneumo-Kit, manufactured by BioMerieux SA) was used to identify the etiology of bacterial purulent meningitis. This method is highly sensitive, easy to use, and allows the attending physician to respond in the shortest possible time. In parallel, samples were examined using multiplex polymerase chain reaction (PCR) to identify the genetic material of S. pneumoniae, yeast-like fungi, and viruses.

RESULTS AND DISCUSSION

The incidence of pneumococcal meningitis in the adult population of Samarkand has not been analyzed to date. However, there has been a steady increase in the number of people hospitalized with a confirmed diagnosis of pneumococcal meningitis: 5 people in 2022, 7 people in 2023, and 9 people in 2024.

The primary diagnoses in patients with pneumococcal meningitis upon admission to the hospital were: "Viral infection of the central nervous system" (47.3%); "Meningoencephalitis of unknown etiology" (13.1%); "ARI with meningism" (13.1%);

"Tick-borne encephalitis" (10.5%); "Pneumonia" (8.4%);

"Meningococcal infection" (7.8%).

When analyzing the age structure of patients with pneumococcal meningitis, it should be noted that people aged 25 to 30 years (26%) and over 40 years (52%)

were more likely to get sick; 15% of cases were aged 30 to 40 years, and 7% were aged 15 to 25 years, which is consistent with the data of other researchers.

Even if we take into account the fact that pneumococcal meningitis is more often registered in males, our study did not reveal any reliable differences by gender among patients with pneumococcal meningitis (women - 52.6, men - 47.4%). Most cases were noted in the autumn-winter period - 68.4% (26 people).

According to literary data, the development of pneumococcal meningitis may be preceded by head injuries, upper respiratory tract infections and ENT organs of pneumococcal etiology [4]. From the anamnesis of the patients we examined, it was revealed that 86.5% of individuals with meningitis caused by S. pneumoniae had concomitant pathology in the form of: secondary immunodeficiency (HIV infection, malignant neoplasm, diabetes mellitus, rheumatoid arthritis) - 28.9% of cases, respiratory diseases (pneumonia, acute and chronic bronchitis) - 18.4%, ENT diseases (nasopharyngitis, acute purulent otitis, sinusitis, rhinosinusitis) - 15.7%, acute respiratory viral infections - 13.1%, herpes infection - 2.6% and physiological conditions such as pregnancy and lactation (7.8%). According to the clinical picture, pneumococcal meningitis has a significant similarity with meningococcal meningitis, therefore, differential diagnostics is necessary at an early stage. The clinical picture of pneumococcal meningitis was characterized by an acute, even violent onset of the disease with pronounced intoxication syndrome. High temperature of 39-40 °C was observed in 71.4% (15 people), and a third of patients had shaking chills. 38.0% of patients (8 people) complained of weakness; 14.2% (3 people) complained of drowsiness; 9.5% (2 people) noted dizziness, headache and pain in the eyeballs when moving. Four patients (19.0%) had catarrhal symptoms of the upper respiratory tract in the form of dry and productive cough and serous nasal discharge. Only two patients (9.5%) had small-point hemorrhagic rashes on the skin of the trunk and extremities.

CONCLUSION

The main risk factors for the development of pneumococcal meningitis are: age over 40 years (52%); secondary immunodeficiency (HIV infection, diabetes

mellitus, malignant neoplasms, long-term use of GCS in the anamnesis); pregnancy and lactation. Often, pneumococcal meningitis takes a severe course (85.7%) with signs of damage to the nervous system, accompanied by the development of complications in the form of cerebral edema, hemodynamic instability and impaired consciousness. In 24.1%, the development of pneumococcal meningitis is preceded by sinusitis, otitis media and pneumonia. Microbiological diagnosis of bacterial meningitis requires the use of a range of methods, including not only microscopic, bacteriological and serological examination (latex agglutination), but also PCR detection of pathogenic microorganisms in the cerebrospinal fluid, the diagnostic value of which is 46.4%.

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