MODERN TRENDS IN THE TREATMENT OF PNEUMONIA

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Abstract: The article discusses the general principles of etiological diagnostics of community-acquired pneumonia (CAP) in adults, indications for and clinical material for various types of research, and criteria for interpreting the results obtained. The characteristics of various methods for detecting and identifying the most relevant pathogens of CAP are given.
Keywords: community-acquired pneumonia, etiology, microbiological diagnostics.

INTRODUCTION

The spectrum of pathogens causing CAP is quite diverse. Its modern classification, taking into account the state of the patient's immunological reactivity, allows us to distinguish two main groups of CAP: in patients without significant immune disorders and in patients with severe immunosuppression (acquired immunodeficiency syndrome, other immunodeficiencies, including iatrogenic ones) [1].

MATERIALS AND METHODS

However, most cases of the disease are associated with a relatively small range of pathogens. The most common typical bacterial pathogens of CAP include Streptococcus pneumoniae, Haemophilus influenzae, bacteria of the Enterobacteriaceae family – Klebsiella pneumoniae, Escherichia coli, etc., Staphylococcus aureus [2]. In some categories of patients (for example, if there was recent intake of antimicrobial drugs (AMP) or long-term therapy with systemic glucocorticosteroids in pharmacodynamic doses, with concomitant cystic fibrosis, secondary bronchiectasis), the role of Pseudomonas aeruginosa in the etiology of CAP increases. Among atypical microorganisms, the most common are Mycoplasma pneumoniae, Chlamydophila pneumoniae and Legionella pneumophila. The importance of anaerobic microorganisms colonizing the oral cavity and upper respiratory tract (URT) in the etiology of CAP has not been fully determined. However, the likelihood of infection with anaerobes may increase significantly in individuals with proven or suspected aspiration due to episodes of impaired consciousness during seizures, some neurological diseases (e.g., stroke), dysphagia, and diseases accompanied by impaired esophageal motility.

RESULTS AND DISCUSSION

The causative agents of CAP can also be respiratory viruses, most often influenza viruses, coronaviruses, rhinosyncytial virus (RS virus), metapneumovirus and human bocavirus [3]. A distinction is made between primary viral pneumonia, which develops as a result of direct viral damage to the respiratory parts of the lungs, characterized by a rapidly progressing course with the development of severe respiratory failure, and secondary bacterial pneumonia, which can be combined with primary viral damage or be an independent late complication of influenza. The most common causative agents of secondary bacterial pneumonia in patients with influenza are S. aureus and S. pneumoniae. The frequency of detection of respiratory viruses in patients with CAP has a pronounced seasonal nature and increases in the cold season. In CAP, there may be a co-infection with two or more pathogens, caused both by an association of different bacterial pathogens and by their combination with respiratory viruses. The incidence of CAP caused by an association of pathogens varies from 3 to 40%. According to a number of studies, CAP caused by an association of pathogens tends to be more severe and have a worse prognosis [4]. For some microorganisms (Streptococcus viridans, Staphylococcus epidermidis and other coagulase-negative staphylococci, Enterococcus spp., Neisseria spp., Candida spp.), the development of bronchopulmonary inflammation is not characteristic. Their isolation from sputum in patients without severe immunodeficiency is highly likely to indicate contamination of the material with URT microflora [2].

Against the background of an increase in the proportion of individuals with severe immune deficiencies in the population (HIV infection, congenital immunodeficiency, oncohematological diseases, etc.), the importance of opportunistic pathogens such as Pneumocystis jirovecii and cytomegalovirus in the etiology of URT has increased in recent years. However, given the high level of carriage, conducting an examination to identify these pathogens using modern laboratory diagnostic algorithms is advisable only in individuals from special risk groups [3].

The advisability of timely etiological diagnosis of CAP and, if possible, assessment of the sensitivity of microorganisms to AMP is determined by the following factors [4]:

1) timely microbiological studies of CAP allow for the adjustment of antibiotic therapy in a specific patient, in particular when an unusual pathogen is isolated that was not taken into account when choosing drugs for empirical therapy and/or in the case of an unexpected profile of its resistance to AMP. The use of de-escalation therapy when the etiological diagnosis of CAP has been established will help reduce costs, decrease the risk of developing adverse drug reactions and select antibiotic resistance;

2) studies aimed at identifying a number of potential pathogens of CAP may have important epidemiological significance in terms of preventing epidemics (SARS-associated coronavirus (SARS - severe acute respiratory syndrome), influenza virus, Legionella spp.) and identifying cases of bioterrorism (pathogens of plague, tularemia, anthrax);

3) monitoring the structure of pathogens of CAP and their sensitivity to AMP is necessary for adequately formulating recommendations for the empirical choice of drugs in different categories of patients and their timely correction.

CONCLUSION

Thus, timely etiological diagnostics is an integral component of high-quality and effective treatment of adult patients with CAP. Significant progress in the field of microbiology, noted in the last decade, provides the physician with a wide arsenal of methods for identifying various pathogens of CAP (both bacteria and viruses) and offers standardized approaches to determining their sensitivity to AMP.

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