MODERN METHODS OF ETIOLOGICAL DIAGNOSING OF ACUTE COMMUNITY-ACQUIRED LOWER RESPIRATORY TRACT INFECTIONS

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Abstract

The review presents the possibilities presented by various methods of etiological diagnostics used in pulmonology.

The main method of diagnosing acute community-aquired lower respiratory tract infections is the microbiological approach which includes microscopy of patient's material with Gram staining, cultures on nutrient media, isolation of culture, identification and determination of susceptibility of a microorganism to antibiotics. But unfortunately the etiologocal factor cannot be detected in about half of patients.

Recently, the popularity of molecular methods of etiological diagnosis has grown. They are characterized by greater sensitivity to microbiological methods and allow to get results faster. Molecular diagnostic tests are divided into four categories depending on the mechanism based on them: immunoassay, hybridization methods, amplification and sequencing methods.

Among the tests based on the principles of immunoassay, noteworthy are rapid tests, which are most consistent with the idea of an ideal diagnostic tool in the field of laboratory medicine. They are fast, simple, cheap, highly sensitive and highly specific. However, as the appearance of specific antibodies in the body takes some time, the results of tests based on immunoassay remain positive for several weeks after the delayed episode of acute community-acquired lower respiratory tract infection, so they have diagnostic value only in the presence of clinical manifestations of the disease.

The genetic approach allows the detection of infectious agents in the early stages of the disease, when serological and immunological methods are ineffective.

Tests based on nucleic acid amplification, including PCR, have also become increasingly common recently. These methods should be used for the diagnosis of atypical pathogens and respiratory viruses, because their cultivation in culture is difficult.

Sequencing and mass spectrometry methods are being actively developed, but there are limitations that prevent their use in everyday clinical practice.

So the combination of microbiological approach with molecular diagnostic methods is the most optimal for the identification of the causative agent of acute community-acquired lower respiratory tract infections and the use of targeted etiotropic treatment.

Key words: acute community-acquired lower respiratory tract infections, etiological diagnosis, microbiological, serological, immunological, molecular genetic methods, ICA, PCR, sequencing, mass spectrometry.

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