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CHARACTERISTICS OF ANTIBIOTIC THERAPY OF CHLAMYDIAL AND MYCOPLASMA INFECTIONS

Kudratova Zebo Erkinovna,
Burxanova Dilovar Sadridinovna,
Nuraliyeva Rano Matyakubovna
Samarkand State Medical University, Samarkand, Uzbekistan

Abstract
At present in spite of ongoing research and improvement of bronchitis treatment therapy, practicing physicians often face insufficient effectiveness in clinical practice. The resistance of pathogenic microorganisms is constantly increasing, which is associated with irrational antibiotic therapy, among other things, and indicates the need for further research on improving the tactics of etiotropic and pathogenetic therapy [14,18].

Keywords: chlamydial infection, mycoplasma infection, macrolides, antibiotics, atypical microflora;

Determining the etiological factor of AOB is crucial for providing adequate etiotropic therapy in the early stages of the disease [11].
The development, course and outcome of diseases caused by Chl. pneumoniae and Mus. pneumoniae are largely determined by the condition of the child's organism, the features of its homeostasis, immunological reactivity, the presence of accompanying diseases, biological properties of the pathogen, including its ability for long-term persistence, and many other factors [16].
Considering modern ideas about the role of pathogens, diagnosis and issues of differential diagnosis depending on the etiological factor, algorithm of initial antibiotic therapy, the author noted that in recent years, there remains irrational use of macrolides and oral cephalosporins in the initial therapy of respiratory diseases. Thus, in community-acquired pneumonia, the use of β-lactam antibiotics in atypical pneumonia, administered in 81% of patients, proved ineffective [2,3,4].
The effectiveness of etiotropic therapy in AOB can be assessed by the elimination of clinical symptoms, normalisation of haemostasis analysis and elimination of the pathogen [1,7].

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The rational use of antibiotic therapy remains a challenge, due to the verification of the diagnosis of AOB, taking into account the identification of new etiologic agents and the variability of existing ones, including those of the atypical flora [4,9].

Rational approaches to prescribing antibiotics need to be developed, if they are lacking or outdated data are used, there is a risk of poor prognosis and the emergence of resistant strains, especially in atypical etiologies.

Treatment of children with chlamydial and mycoplasma infections is based on regional sensitivity, age, toxicity, child-specific tolerability, previous and concomitant pathology and the nosological form of the disease [7,8].

Myc. Pneumoniae and Chl. Pneumoniaea share several properties: they cannot be detected by conventional microbiological methods, they are obligate or facultative intracellular parasites and cause extrapulmonary symptoms, and because they lack a peptidoglycan cell wall, they do not respond to β-lactam antibiotics. However, they respond to drugs that inhibit protein synthesis, such as macrolides and tetracyclines, or to DNA synthesis inhibitors, such as fluoroquinolones [1,3,11,15].

Macrolides have the ability to accumulate in tissues and lesion sites; it should be considered that this process occurs most intensively in the tonsils, lymph nodes, and lung tissue, which determines their choice for the treatment of chlamydia. The role of macrolides in the treatment of respiratory diseases has increased considerably. A special feature of macrolide pharmacodynamics is their long-lasting post-antibiotic effect. The most widely used 3 groups of macrolides: 1st group - 14-membered (erythromycin, oleandomycin, clarithromycin, roxithromycin); 2nd group - 15-membered (azithromycin); 3rd group - 16-membered (jozomycin, spiramycin, midecamycin). Macrolides (azithromycin, jozamycin, roxithromycin, clarithromycin, midecamycin, spiramycin) have a bacteriostatic at medium and bactericidal effect at high drug doses, while being effective against most gram-positive bacteria, anaerobes, spirochaetes, chlamydia and mycoplasmas [2,7,8]. Macrolide antibiotics are still the most effective and frequently used drugs against mycoplasma and chlamydia infections.Myc. Pneumoniae and Chl. Pneumoniaea parasitizes outside the cell and has no cell wall, the main purpose of which is to inhibit and disrupt the protein synthesis of the microorganism.

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The first generation macrolide drug erythromycin was first used to treat Myc. Pneumoniae and Chl. Pneumoniaea in children, due to its good antibacterial properties, can at the same time cause more obvious adverse reactions in the digestive tract, even causing phlebitis and local pain, prolonged treatment can cause liver and kidney damage [10,17].

Macrolides, with their prolonged elimination period, retain their antibacterial activity for 4-5 days after antimicrobial therapy. As chlamydiae and mycoplasmas are obligate intracellular parasites that tend to persist for long periods in children with transient immunological insufficiency. In this regard, single courses of macrolides do not always lead to eradication of chlamydial and mycoplasma infections. Therefore, the use of immunomodulatory drugs is indicated in the treatment of almost all forms of chlamydial infections in children [1,2,3,4].

However, as strains of Myc. Pneumoniae and Chl. pneumoniae strains resistant to macrolides gradually increased, and the total duration of febrile days, course and hospitalization time in children increased. There were more inflammatory reactions and complications [4,6,7,8]. Macrolides in general, and clarithromycin in particular, are now included in recommendations for the treatment of respiratory tract infections caused by "atypical" pathogens, on the one hand because of their high antimicrobial activity against chlamydia and mycoplasmas and the lack of significant resistance problems with the above pathogens, and on the other because of their favourable safety profile and possibility of use in children from an early age [9,10,11,12].

In recent years, there is evidence of immune status abnormalities in bronchopulmonary disease and, in some cases, the presence of primary and development of secondary immunodeficiencies, suggesting the need for immunocorrective therapy in children with AOB [13,14]. Among the new-generation immunomodulators, the domestic drug Galavit deserves special attention [15,16].

According to the literature, Galavit has immunomodulatory and anti-inflammatory properties, which is associated with the regulation of functional and metabolic activity of innate and acquired immune cells. The drug action restores phagocytic activity of monocytes and macrophages, increases bactericidal activity of neutrophils and cytotoxic activity of NK-cells.

Application of Galavit enhances body resistance to infectious diseases of both bacterial and viral genesis, accelerates elimination of pathogenic agent from the body, reducing the frequency and duration of the disease. The functional activity of antibodies is strengthened and improved, the production of interferons (INF-α, INF-γ) is improved. In inflammatory diseases Galavit on average for 6-8 hours inhibits pathological synthesis of tumour necrosis factor-α, interleukin-1, interleukin-6 and other pro-inflammatory cytokines, their cycling, as well as reducing intoxication syndrome in patients [4,5,6].

However, data on the use of Galavit in combination with Clarithromycin in children with obstructive bronchitis and its effect on cellular and humoral immunity were not found in the available literature. In this regard, the purpose of our study was to evaluate the effectiveness of Galavit on clinical and immunological parameters in children with acute obstructive bronchitis [19,20].

Untimely diagnosis and treatment of atypical flora in children with AOS leads to a recurrent episode and a prolonged course of the disease, repeated hospital admissions, which incurs additional economic costs and can lead to adverse outcomes with the possibility of developing chronic disease. The current relevance of research in children with SARS is to identify and improve diagnostic and prognostic clinical and laboratory methods, and to improve therapeutic interventions to form a personalised approach to patient management [5,13,18]. To summarise our review of the literature, we conclude that the interest in SARS in childhood is highly relevant. Despite the introduction of modern diagnostic methods, studying the patterns of clinical and immunological changes, they still remain understudied, which determines the need for research to optimise the diagnosis and therapy of the disease. The search for methods of early diagnosis and improvement of treatment efficacy can be accepted as a priority of public health policy.

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