

## Antibacterial Therapy in the Treatment of Acute and Chronic Bronchitis

Rustamov Oybek Umarovich, Navruzov Rustam Rashidovich

Bukhara State Medical Institute, Republic of Uzbekistan, Bukhara city

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### ABSTRACT

Acute infections account for more than 90% of all respiratory tract diseases in childhood [1]. Despite the availability of practical recommendations on the use of antibacterial drugs in children in outpatient practice [2], drugs of this type are often prescribed unreasonably, and therefore the issues of their rational use in the treatment of respiratory tract infections remain relevant. Since up to 70% of acute respiratory infections are viral in nature, they do not require antibacterial therapy. This provision applies to both most diseases of the upper respiratory tract and acute bronchitis. Prescribing antibiotics for respiratory viral infection does not reduce the duration of treatment and the number of complications, and unjustified prescribing increases the risk of side effects, disrupts the biocenosis and contributes to the spread of drug resistance.

**Objective:** to analyze the prescriptions of antibacterial drugs in the treatment of acute and chronic bronchitis.

**Materials and methods.** Completed cases of treatment of respiratory infection with antibiotics were analyzed and the following indicators were evaluated: age of patients; nosological form of the disease, its severity; indications for antibacterial therapy, its duration and duration; outcome of the disease. The distribution of children by age was as follows: first year of life — 15 (7.9%); from 1 to 3 years — 52 (25.9%); from 3 to 7 years — 71 (37.8%); school children — 50 (26.8%). According to medical records, all children showed signs of an inflammatory process of the upper or lower respiratory tract. The condition of the children was assessed as satisfactory or moderate, and at the stage of prescribing initial antibacterial therapy, no children were recommended to be admitted to a hospital with a round-the-clock stay. Among the clinical diagnoses, 125 (66.5%) children had acute pharyngitis or rhinopharyngitis, 5 (2.6%) — acute laryngitis, 34 (18.1%) — acute bronchitis, 22 (11.7%) — tonsillitis, pharyngotonsillitis. Pneumonia was detected in 2 (1.1%) children, confirmed by X-ray examination. In most cases (91.4%), the diagnosis was established by a pediatrician based on clinical examination data; only 16 (8.3%) children were examined by an otorhinolaryngologist due to a complicated course of acute respiratory infection. The course of acute rhinopharyngitis in 45 out of 125 children (36.0%) was complicated by purulent sinusitis, adenoiditis, or acute otitis media, which could indicate the addition of a bacterial infection. In four children, the course of acute bronchitis was accompanied by symptoms of bronchial obstruction. Along with antibacterial therapy, children received anti-inflammatory, mucolytic and symptomatic therapy.

### Results and discussion.

The first stage of the analysis was the validity of prescribing an antibiotic. The most common mistake in outpatient practice was found — prescribing antibacterial drugs for acute respiratory viral infections, although in the uncomplicated course and the absence of data on the addition of

bacterial infection, antibiotics are not indicated, taking into account the current recommendations for the use of antibiotics in children in outpatient practice, the indication for prescribing an antibiotic is the presence of a bacterial focus or its suspicion. Theoretically, most doctors understand the inexpediency of antibacterial therapy for this pathology, but in practice, knowledge of the methodological recommendations does not determine the commitment of pediatricians to the rational management of children with acute respiratory infection. We considered an obvious bacterial focus (pneumonia, tonsillitis with an established streptococcal etiology) or suspicion of it and the presence of clinical and laboratory markers of bacterial infection to be a reasonable prescription of antibacterial therapy.

At the pediatric site, antibiotics were prescribed on the first day of diagnosis in 63.8% of cases, on days 2 and 3-in 22.8%, and after > 3 days from the start of follow-up — in 13.3%. As a rule, children were admitted to the day hospital no earlier than 5-7 days after the onset of the disease, and in all cases, antibacterial therapy was prescribed on the day of admission. It should be noted that when diagnosing pneumonia, antibiotics were prescribed in a timely manner, i.e. on the first day of a doctor's visit. The diagnosis of acute tonsillitis was established in 22 children over 6 years of age only on the basis of clinical signs (high fever, severe sore throat, hyperemia of the tonsils with purulent overlays, enlarged and painful submandibular and anterior cervical lymph nodes, absence of catarrhal symptoms). In 100% of cases, antibacterial drugs were prescribed empirically, without previous bacteriological examination. There was no opportunity to conduct a rapid strep test. According to the results of bacteriological examination of mucus from the tonsils, beta-hemolytic streptococcus group A was isolated in 24.5% of children. At the end of the main course of antibacterial therapy, 10 children with a diagnosis of acute tonsillitis (45.5%) received a single injection of benzathine benzylpenicillin, however, without taking into account the risk factors for relapse of streptococcal infection. In some cases, medical records in outpatient development histories and day hospital medical records did not allow us to determine with absolute certainty the validity of prescribing antibacterial therapy. According to our analysis, the condition for reasonable prescribing of antibiotics for bronchitis was, first of all, a prolonged course of the disease (in 11 people), a prolonged febrile temperature (in 5), the presence of an unfavorable background (in 2) or recurrent course of respiratory infection (in 2 patients). In addition to the complicated course of acute rhinopharyngitis (otitis, sinusitis), which requires the appointment of antibacterial therapy, a group of young children was identified, in which the onset of the disease was accompanied by prolonged or recurrent fever, which caused suspicion of a bacterial process, and signs of nasopharyngeal damage (catarrhal syndrome) appeared later. The lack of a complete examination of children at the outpatient stage did not allow the district doctor to depart from the standard diagnosis of acute rhinopharyngitis. From our point of view, prescribing antibacterial drugs to children with acute respiratory infections can be significantly reduced if the indication for prescribing an antibiotic is recorded in the outpatient history of the child's development. Often, the appointment of an antibiotic was associated with the early age of the child or the urgent request of the parents. In 10.1%, cases of self-administration of an antibiotic to a sick child by parents were recorded even before the child was examined by a doctor. The frequency of unjustified prescribing of antibiotics in children of the first year of life was significantly higher than in children from one to seven years of age ( $p < 0.05$ ; Table 2). The unreasonableness of antibiotic therapy in school-age children was often associated with independent prescribing of the drug by parents. In outpatient settings, the choice of an antibiotic is usually empirical and should take into account the age, form of the disease, its severity and, consequently, the suspected pathogen. In most cases, children were given antibiotics as monotherapy

## **Conclusions.**

The frequency of unjustified use of antibiotics in outpatient practice in children is 38.3%, mainly

in the treatment of acute rhinopharyngitis, laryngitis and acute bronchitis. Children of the first year of life are unreasonably prescribed antibiotics in 66.7% of cases. The main antibacterial drugs prescribed by pediatricians to children on an outpatient basis are amoxicillin, amoxicillin clavulanate and azithromycin.

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