

## EVALUATION OF THE EFFECTIVENESS OF ANTIBIOTICS IN THE TREATMENT OF COMMUNITY-ACQUIRED PNEUMONIA IN CHILDREN

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### Annotation

The article discusses the issues of the rational use of antimicrobial agents, the study of the structure of the use of these agents in the pharmacotherapy of community-acquired pneumonia in children, and the study of mistakes made by doctors when choosing a rational antimicrobial agent. Also, antimicrobial agents used to treat pneumonia in children will be considered, as well as their dosage regimens and methods of administration are presented.

**Keywords:** community-acquired pneumonia, etiotropic treatment, antibacterial agents.

Diseases of the upper respiratory tract are considered the most common diseases in the children's contingent. Pneumonia refers to acute infectious and inflammatory diseases that affect the lung tissue. Every year, 155 million children in the world suffer from pneumonia, of which 1.8 million children die from pneumonia, which is 20% of all child deaths. [1, 4, 5-8] The danger of this disease lies in the fact that when the lung tissue is damaged, it cannot perform its function and therefore respiratory failure develops. With incorrect and untimely treatment of pneumonia, complications may develop in the form of purulent abscesses, pleurisy, sepsis and others, which can lead to the death of the child. Pneumonia is a serious and common disease in pediatrics, as children are more susceptible to pneumonia than adults. This is explained by the fact that children have not yet developed the immune system, including the respiratory organs, and the narrowness of the respiratory passages in children causes stagnation of mucus in them and makes it difficult to remove [10, 12,]. Depending on the place of development, pneumonia is hospital-acquired (nosocomial) and community-acquired. The hospital develops in the hospital, and the out-of-hospital develops outside the hospital when in contact with patients at home, in a preschool or school institution. With pneumonia, symptoms such as fever of the child's body, rapid breathing or even shortness of breath, pallor of the skin, cough with sputum, sweating, severe weakness are observed. Given the clinical data, the "gold standard" for diagnosing this disease is chest x-ray. The causative agents of community-acquired pneumonia in childhood are mainly pneumococci, mycoplasmas, chlamydia. However, staphylococci, streptococci, Klebsiella, Haemophilus influenzae, Mycobacterium tuberculosis can also become a source of the disease. A favorable prognosis for pneumonia depends on timely diagnosis and adequate etiotropic treatment. The choice of drugs for pneumonia, as well as for other infectious and inflammatory diseases, will be antibacterial drugs. In some cases, the initial choice of antibiotics may not be correct, which leads to the absence of the effect of treatment [3,9].

### Purpose of the Work:

The paper studies the use and rationality of the use of antimicrobial drugs in the pharmacotherapy of

acute community-acquired pneumonia in children.

#### **Materials and Methods:**

The material for the study was 100 case histories of children aged 1-15 years with a diagnosis of "acute community-acquired pneumonia, uncomplicated form" who were hospitalized in the 1st children's department of the TashPMI clinic in 2020. The research method was a retrospective analysis of case histories. From the history of diseases, drugs used for the purpose of antibacterial therapy, the duration of antibacterial therapy, the frequency of using antibacterial therapy in the form of monotherapy or in combination, the level of rationality of using combination therapy were analyzed.

#### **Results and its Discussion:**

analysis of the study of the structure of the use of antibacterial drugs gave the following results:

**Table 1 Total number of antibacterial drugs used**

International title	Group name	Number of drugs
Ceftriaxone	III generation cephalosporin antibiotic	32
Cefepime	Antibiotic of the cephalosporin group II generation	25
Metronidazole	Antibacterial and antiprotozoal agent	31
Amikacin	Aminoglycoside antibiotic	9
Cefotaxime	III generation cephalosporin antibiotic	7
Cefazolin	Antibiotic of the 1st generation cephalosporin group	5
Ceftriaxone	III generation cephalosporin antibiotic	4
Cefuroxime	Antibiotic of the cephalosporin group II generation	3
cefoperazone, sulbactam	III generation cephalosporin antibiotic in combination with a beta-lactamase inhibitor	2
Ceftriaxone	III generation cephalosporin antibiotic	1
Cefazolin	Antibiotic of the 1st generation cephalosporin group	1
Ceftazidime	III generation cephalosporin antibiotic	1

Table 2

### The frequency of use of antibiotic therapy in combination

Trade name of the drug, duration of therapy	Number and % of drugs
Ceftriaxone (No. 4-8) + metrogyl (No. 3-6; in 2 cases from the 3rd day from admission to the hospital)	17
Cefazolin (No. 4-8) + metrogil (No. 3; in 1 case from the 6th day)	3
Klaforan (No. 8-9) + metrogil (No. 3-6)	3
Zinacef (No. 5; in 1 case from the 2nd day from admission to the hospital and on the 4th day was not done) + metrogil (No. 6-7)	2
Cefepime (No. 4) + Metrogyl (No. 2)	1
Cefamezin (No. 4) + Metrogyl (No. 5)	1
Zinacef (№8; dose increased from day 3) + Metrogyl (№5; dose increased from day 2)	1
Cefazolin (No. 8) + Metrogil (No. 5)	1
Ceftriaxone (No. 7) + netromycin (No. 2; on days 6-7)	1
Bactocel (No. 11) + Netromycin (No. 6; from the 6th day) + Metrogyl (No. 6)	1

From the first table, you can see that for the purpose of antibacterial therapy, in the vast majority of cases, antibiotics of the cephalosporin group were used, and among them ceftriaxone occupies the first place, and metronidazole occupies the 2nd place in terms of the frequency of use. The second table reflects the state of use of antibacterial drugs in the form of a combination. From these data it can be found that in 30% of cases, antibacterial agents from the cephalosporin group (mainly ceftriaxone) were used in combination with metronidazole. The analyzes performed show no indications for the use of antibacterial therapy in the form of a combination. Antibacterial therapy in the form of a combination of cephalosporins (ceftriaxone, cefotaxime) + metronidazole is advisable to use in concomitant anaerobic infections and in severe forms of pneumonia (if aspiration is suspected).

#### Conclusions:

1. For the purpose of antibiotic therapy in children with acute community-acquired pneumonia, antibiotics of the cephalosporin group were used in most cases.
2. The average duration of antibiotic therapy in children with acute community-acquired pneumonia was 6.5 days.
3. In the pharmacotherapy of children with acute community-acquired pneumonia, antibacterial drugs were mainly used as monotherapy.
4. In the pharmacotherapy of acute community-acquired pneumonia in children, in most cases, irrational and unreasonable combinations of antibacterial agents were encountered.

#### REFERENCES

1. Zebo N. Sherova, Komola Sh. Shaabidova, Komola Y. Normatova, Izzatullo Z. Sobitov Prevention and treatment of Iron Deficiency Anemia in children. Journal of Advanced Medical and Dental Sciences Research Индия. сентябрь. 2020. 203-206 с.

- 2.Spurling GK, Del Mar CB, Dooley L, et al. Delayed antibiotic prescriptions for respiratory infections. *Cochrane Database Syst Rev*.2017;9:CD004417. doi: 1002/14651858.CD004417.pub5.
- 3.Ashworth M, White P, Jongsma H, et al. Antibiotic prescribing and patient satisfaction in primary care in England: cross-sectional analysis of national patient survey data and prescribing data. *Br J Gen Pract*. 2016;66(642): e40–e46. doi: 10.3399/bjgp15X688105.
- 4.Etiotropic Treatment Of Community-Acquired Pneumonia In Children. «Scopus preview - Scopus - Journal of Critical Reviews» No. 103, Section 4, Roosevelt Rd, Da'an District, Taipei City, Taiwan 8 July 2020/ 210. Sherova Z.N., Kamola Y.N., Shaabidova K.Sh.,Muhiddinova M.I., Karabekova B.A..
- 5.Лютина Е. И., Манеров Ф. К. Заболеваемость и смертность от внебольничной пневмонии у детей и подростков, проживающих в Кузбассе//Педиатрия. 2015. № 2. С. 203–206.
6. Практика лечения острых респираторных инфекций у детей в амбулаторно-поликлинических учреждениях РФ: результаты многоцентрового фармако - эпидемиологического исследования. Клиническая фармакология и терапия. 2016;25(2):20-27. Рачина С.А., Козлов Р.С., Таточенко В.К., Жаркова Л.П., Дудникова Э.В., Сакулина И.Б., Малцев С.В., Спичак Т.В.
7. Эндолимфатическое введение антибиотиков с диффузным перитонитом. «Europe science and we Eurora, наука и мы» интернациональная конференция. Чешская республика Прага 2020 июл.117 с. Норматова К.Ю., Шерова З.Н., Шаабидова К.Ш.
8. Низкая эффективность антибиотиков, назначаемых амбулаторно детям с пневмонией и острым средним отитом, как следствие несоблюдения клинических рекомендаций. *Педиатрическая фармакология*. Бакрадзе М.Д., Таточенко В.К., Полякова А.С., Чашина И.Л., Хохлова Т.А., Гадлия Д.Д., Рогова О.А. 2016;13(5):425-430.
9. Стратегия и тактика рационального применения антимикробных средств в амбулаторной практике. Евразийские клинические рекомендации. Под ред. С.В. Яковлева, С.В. Сидоренко, В.В. Рафалского, Т.В. Спичак. М.: 2016, 144 с.
10. Esposito S., Patria M.F., Tagliabue C., et al. CAP in children. European respiratory monograph 63: Community-acquired pneumonia. Ed.: J.Chalmers, M. Pletz, S. Aliberti. 2014:130-139.
11. О проблемах диагностики и лечения пневмоний у детей. *Педиатрическая фармакология*. 2015;12(3):354-359. Бакрадзе М.Д., Гадлия Д.Д., Рогова О.А., Хохлова Т.А., Таточенко В.К.
12. Внебольничная пневмония у детей. Клинические рекомендации. М.: Оригинал макет, 2015. 64 с.
13. Микоплазменная пневмония у ребенка, в чем проблема? Медицинский совет. Спичак Т.В. 2018; 6:31-36.
14. Диагностика пневмоний. В кн.: Болезни органов дыхания у детей. Практическое руководство. 2-е изд., испр. 2015 Таточенко В.К., Бакрадзе М.Д. 167-180.
15. Коровина, Н.А. Лихорадка. Многообразие причин и сложность решения / Н.А. Коровина, И.Н. Захарова, Е.М. Овсянникова // Медицинский совет. – 2013. – №2. – С.82–90.
16. Sullivan, J.E. Clinical report – fever and antipyretic use in children / J.E. Sullivan, H.C. Farrar // *Pediatrics*. – 2011. – Vol.127, N3. – P.580–587.
17. Harris NS, Wenzel RP, Thomas SH (2003) High altitude headache: efficacy of acetaminophen vs, ibuprofen in a randomized, controlled trial.

18. Johnson Ч, Wilson ID, Harding JR, Stachulski AV, Iddon L, Nicholson JK, Lindon JC (2007) NMR spectroscopic studies on the in vitro glucuronide migration kinetics of ibuprofen ((+/-) (R, S) 2 (4 sobutylphenyl) propanoic acid), its metabolites and analogues. Anal Chem 8727.
19. Оценка эффективности эндолимфатического введения у пациентов с диффузным перитонитом. «Достижения науки и образования» Научно-методический журнал № 8(62) г. Иваново, 2020 год. 96-98 стр. Норматова К.Ю., Иномова С.И.
20. Nir-Paz R. Clinical syndromes associated with Mycoplasma pneumoniae infections. Educational Workshop 07: Mycoplasma pneumoniae: epidemiology, diagnosis and treatment. 25th ECCMID, Copenhagen, Denmark, 25 April 2015 <https://www.escmid.org/ESGMI>.