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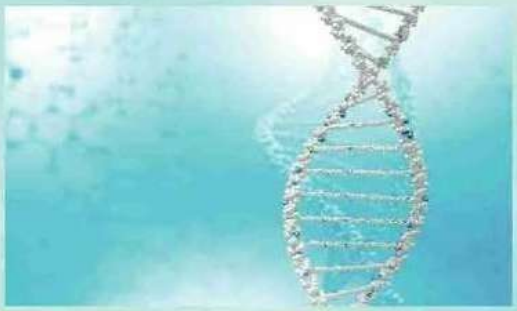

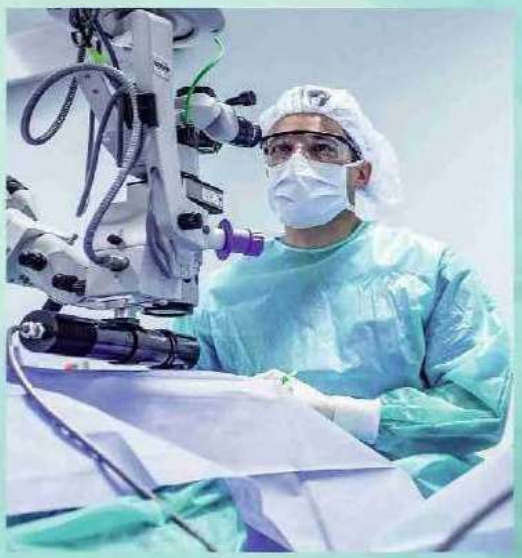

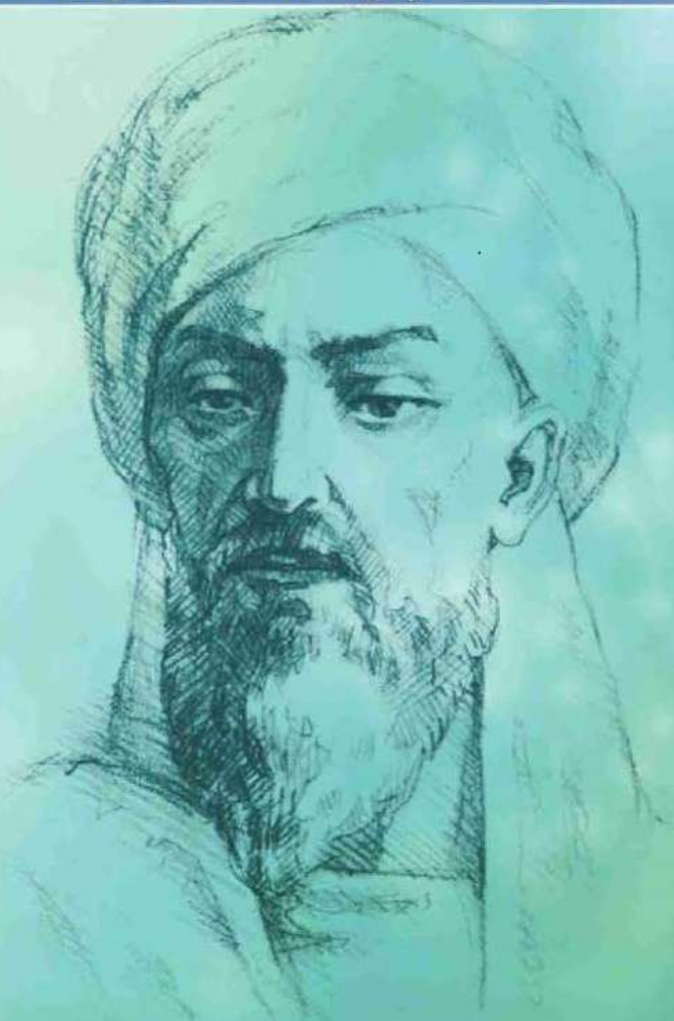

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NEW DAY IN MEDICINE

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ANALYSIS OF ANTIBIOTIC SENSITIVITY AND ANTIBIOTIC RESISTANCE OF STREPTOCOCCUS PNEUMONIAE IN CHILDREN IN THE CITY OF SHYMKENT

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✓ ***Resume***

The paper highlights the main etiological factors of community-acquired pneumonia in children and presents the results of a study of antibiotic sensitivity and antibiotic resistance of the main bacterial pathogens of community-acquired pneumonia: Streptococcus pneumonia. Antibiotic sensitivity and antibiotic resistance to antibacterial drugs was studied in 100 patients. Morning sputum of patients, obtained before the appointment of antibiotic therapy, was the laboratory material for the study. The research method is the analysis of sputum for microflora and sensitivity to antibiotics. Numerous studies show evidence of an increasing number of antibiotic-resistant infections. Conducting a study of sputum in patients on the microflora and sensitivity to antibiotics facilitates the task of choosing an antibiotic for the etiological treatment of pneumonia. The study of sputum culture for microflora and sensitivity to antibiotics can last from 3 to 15 days. Therefore, monitoring of antibiotic resistance and antibiotic sensitivity of infectious agents is so important for the timely and effective initiation of antibiotic therapy.

Keywords: streptococcus pneumoniae, community-acquired pneumonia, antibiotics, antibiotic sensitivity, antibiotic resistance.

АНАЛИЗ АНТИБИОТИКОЧУВСТВИТЕЛЬНОСТИ И АНТИБИОТИКОРЕЗИСТЕНТНОСТИ ВОЗБУДИТЕЛЯ STREPTOCOCCUS PNEUMONIAE У ДЕТЕЙ В ГОРОДЕ ШЫМКЕНТ

Накып Нургали Сакенулы, Сейтханова Бибігүл Төлегенқызы

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✓ ***Резюме***

В работе освещены основные этиологические факторы внебольничной пневмонии у детей и представлены результаты исследования антибиотикочувствительности и антибиотикорезистентности основных бактериальных возбудителей внебольничной пневмонии: Streptococcus pneumonia. Антибиотикочувствительность и антибиотикорезистентность к антибактериальным препаратам была исследована у 100 больных. Утренняя мокрота больных, полученная до назначения антибактериальной терапии, являлась лабораторным материалом исследования. Методом исследования является анализ мокроты на микрофлору и чувствительность к антибиотикам. Данные многочисленных исследований свидетельствуют о возрастающем количестве резистентных к антибиотикам инфекций. Проведение у пациентов исследования мокроты на микрофлору и чувствительность к антибиотикам облегчает задачу выбора антибиотика для проведения этиологического лечения пневмонии. Исследование посева мокроты на микрофлору и чувствительность к антибиотикам может длиться от 3 до 15 дней. Поэтому мониторинг антибиотикоустойчивости и антибиотикочувствительности возбудителей инфекции так важен для своевременного и эффективного начала антибактериальной терапии.

Ключевые слова: пневмококк, внебольничная пневмония, антибиотики, антибиотикочувствительность, антибиотикорезистентность.

SHIMKENT SHAHRIDAGI BOLALARNING PAGENT STREPTOKOKK PNEUMONIYALARINING ANTİBIOTIKLARGA SEZGICHLIGI VA ANTİBIOTIKLARGA CHIZIMLILIGI TAHLILI

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✓ ***Rezyume***

Ishda bolalarda jamiyat tomonidan orttirilgan pnevmoniyaning asosiy etiologik omillari yoritilgan va jamiyat tomonidan orttirilgan pnevmoniyaning asosiy bakterial patogenlarining antibiotiklarga sezgirligi va antibiotiklarga chidamliligini o'rganish natijalari: Streptococcus pneumonia. 100 nafar bemorda antibiotiklarga sezuvchanlik va antibiotiklarning antibakterial preparatlarga chidamliligi o‘rganildi. Antibakterial terapiya tayinlanishidan oldin olingan bemorlarning ertalabki balg'amlari tadqiqot uchun laboratoriya materiali edi. Tadqiqot usuli - mikroflora va antibiotiklarga sezuvchanlik uchun balg'am tahlili. Ko'plab tadqiqotlar ma'lumotlari antibiotiklarga chidamli infektsiyalar soni ortib borayotganini ko'rsatadi. Bemorlarning balg'amini mikroflora va antibiotiklarga sezuvchanligini tekshirish pnevmoniyani etiologik davolash uchun antibiotikni tanlash vazifasini osonlashtiradi.

Balg'am madaniyatini mikroflora va antibiotiklarga sezuvchanlik uchun o'rganish 3 dan 15 kungacha davom etishi mumkin. Shuning uchun infektsion agentlarning antibiotiklarga chidamliligi va antibiotiklarga sezgirligini kuzatish antibakterial terapiyani o'z vaqtida va samarali boshlash uchun juda muhimdir.

Kalit so'zlar: pnevmokokk, jamiyat tomonidan orttirilgan pnevmoniya, antibiotiklar, antibiotiklarga sezuvchanlik, antibiotiklarga chidamlilik.

Relevance

Published statistics are increasingly showing a steady increase in the number of antibiotic-resistant infections. This is one of the main problems in the direction of antibacterial treatment aimed at the etiological component. Recently, the detection of multidrug-resistant strains of pneumococcus has become of great importance. Antibiotic resistance and multiresistance of pneumococcus are one of the main problems in the treatment of community-acquired pneumonia caused by Streptococcus. pneumoniae. In this regard, the need to monitor antibiotic sensitivity is of great importance for the selection of an adequate antibacterial drug [1-10].

Goal and tasks of this research. Investigation of sensitivity and resistance to antibacterial drugs of pathogens Streptococcus pneumoniae isolated during bacteriological examination of sputum cultures in children. To achieve this goal, the following tasks were set: to determine the presence of Streptococcus pathogens in the test material pneumoniae. To investigate the sensitivity of Streptococcus pneumoniae to antibiotics: amoxiclav, amikacin, sumamed, cefazolin, cefotaxime, ceftazidime, ceftriaxone, cefuroxime. And study and analyze the results obtained using statistical research methods and summarize the work done.

Material and research methods

The study was conducted between September 2022 by February 2023 years, during this period, the medical history of patients admitted to the pediatric infectious diseases city hospital in Shymkent. In 100 patients, a study was made to detect the pathogen Streptococcus pneumoniae and its sensitivity to antibacterial drugs. Among the analyzed patients, the female sex was 53%, the average age was 9.6 years, the male gender was 47%, the average age was 9.7 years. Morning sputum of patients, obtained before the appointment of antibiotic therapy, was the laboratory material for the study. Her study was carried out bacteriologically in accordance with the order on the methods of microbiological research in clinical diagnostic laboratories of medical institutions . When conducting a sputum study for microflora and sensitivity to antibiotics, disks were used for the following antibiotics: penicillin group (amoxiclav), cephalosporin’s I-II-III generations (cefazolin, cefuroxime, ceftriaxone, cefotaxime, ceftazidime), aminoglycosides (amikacin) and macrolides (sumamed). Statistical analysis of the obtained data was carried out using the MS Office program Excel, with the calculation of extensive indicators. The value of $P<0.05$ was taken as the level of statistical significance of differences.

Result and discussions

Streptococcus susceptibility pneumoniae to antibiotics: amoxiclav, amikacin, sumamed, cefazolin, cefotaxime, ceftazidime, ceftriaxone, cefuroxime, %

Amoxiclav - 99.6±0.4; Amikacin - 73.2±5.2; Sumamed - 84.5±4.3; Cefazolin 83.8±4.3; Cefotaxime - 92.9±3; Ceftazidime - 85.9±.4.1; Ceftriaxone - 97.1±1.9; Cefuroxime - 90.1±3.5;

These data indicate that the most effective against pneumococcus include such antibiotics as amoxiclav (99.6±0.4%),ceftriaxone(97.1±1.9%), cefotaxime (92.9±3%), cefuroxime (90.1±3.5%), cefazolin (83.5±4.3%), sumamed (84.5±4.3%) and ceftazidime (85.9±.4.1%),amikacin (73.2±5.2%).

1) The highest sensitivity of Streptococcus pneumoniae, showed to ceftriaxone, no differences in efficacy between microorganisms were found.

2) Amikazine is ineffective against Streptococcus pneumoniae.

3) Streptococcus pneumoniae are highly sensitive to cefuroxime, no significant differences in activity were found.

4) These studies have shown that pneumococcus is more sensitive to cefotaxime. Also the study also indicates that pneumococcus is more sensitive to sumamed.

5) Amoxiclav is more effective when used against pneumonia caused by Streptococcus pneumoniae.

6) The data obtained on the effect of cefazolin on Streptococcus pneumoniae indicate good efficacy against these pathogens.

7) The study showed the resistance of Streptococcus pneumoniae is sensitive to the action of ceftazidime (82.9% and 85.9%, respectively).

Conclusions

Summarizing our study of sensitivity and resistance to antibacterial drugs of pathogens Streptococcus pneumoniae , we can draw the following conclusions: to confirm the clinical recommendations for antibiotic therapy in patients with nosocomial pneumonia and to recommend the use of amoxiclav as a starting drug, which is a highly effective drug for children of any age with community-acquired pneumonia (presumably of bacterial etiology) of mild course against Streptococcus pneumonia (99.6%), as well as 3rd generation cephalosporin preparations. This therapy covers almost the entire spectrum of potential pathogens. Amikacin as initial therapy or monotherapy is also unacceptable without data on the etiology of the pathogen, since pneumococci are almost completely resistant to amikacin and other aminoglycosides. The data obtained should be taken into account in the empirical choice of starting antibiotic therapy for nosocomial pneumonia. Conducting regular microbiological monitoring is a prerequisite for optimizing the choice of antimicrobial drugs in pediatrics.

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