

THE ANALYSIS OF THE SPECTER OF PATHOGENS AND ANTIBIOTIC RESISTANCE OF MICROORGANISMS ISOLATED FROM PATIENTS WITH COMMUNITY ACQUIRED PNEUMONIA (CAP)

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Summary: It is analyzed the microbial structure isolated from 106 outpatients with community acquired pneumonia during 2007-2009yy. It has been studied antibioticsusceptibility and antibioticresistance of the most frequently identified pathogens of CAP. According our data in 39% of all cases is isolated Streptococcus group A and the significance of other microorganisms is very low. The research of antibiograms isolated strains showed the highest susecptibility to cefotaxime in 100%.

Key words: community acquired pneumonia, antibioticsusceptibility

АНАЛИЗ МИКРОБНОГО ПЕЙЗАЖА ПРИ ВНЕБОЛЬНИЧНЫХ ПНЕВМОНИЯХ (ВП) И АНТИБИОТИКОРЕЗИСТЕНТНОСТЬ, ВЫДЕЛЕННЫХ ВОЗБУДИТЕЛЕЙ

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Резюме: Проведен анализ видового состава микроорганизмов, выделенных от 106 больных с диагнозом внебольничная пневмония, находящихся на амбулаторном лечении в течение 2007-2009гг.. Изучена антибиотикоустойчивость и антибиотикорезистентность наиболее значимых возбудителей ВП. Анализ показал, что в 39% от всех случаев от больных выделялся Стрептококк группы А и значимость других видов микроорганизмов была значительно ниже. При изучении антибиотикограмм наибольшую чувствительность изученные штаммы проявили к цефотаксму 100%.

Ключевые слова: внебольничная пневмония, антибиотикочувствительность

ОЗГОЧӨЛҮНГӨН МИКРОБ КОЗГООЧУЛАРДЫН ООРУКАНАЛЫК ЭМЕС ИНЕВМОНИЯЛАРГА ЖАНА АНТИБИОТИКОРЕЗИСТЕНТТИКЕ КАРАШТУУ МИКРОБДУК ПЕЙЗАЖДЫН АНАЛИЗИ

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Корутунду: 2007-2009 - жылдардын ичинде амбулатордук дарыланууда жүрүгүкөн ооруканалык эмес пневмония диагнозу менен 106 бейтаптан озгочөлөнүп бөлүнгөн микроорганизмдердин түрүнүн курамынан анализ жүргүзүлгөн. Маанилүү ВП микробун козгоочу антибиотикке туруктуулук жана антибиотикорезистенттүүлүк изилденди. Бардык учурлардан 39 пайызы бейтаптардан А тобундагы Стрептококк бөлүнүп чыккандыгын жана микрорганизоовдун башка түрлөрүнүн маанилүүлүгү төмөн болгондугун анализ көрсөттү. Антибиоттикограммдарды изилдөөдө изилденген штаммдардын жогорку сезгичтиги 100 пайызда цефотаксмага көрсөткөн.

Негизги сөздөр: ооруканалык эмес пневмония, антибиотикке сезгичтик.

Introduction

Community-acquired pneumonia (CAP) is a common and potentially life-threatening illness that continues to be a major medical problem. Among infectious diseases, CAP is the leading cause of death in the world and is associated with a substantial economic burden to health care systems around the globe [1].

Community-acquired pneumonia is a common, morbid, and mortal disease, and appropriate

antibiotic therapy remains the cornerstone of management.

Annually in the USA registered 10 millions visits to practical physicians with CAP and 600 000 patients are hospitalized [2,3]. In Russia CAP is leading as a major factor of mortality in patients with infections of respiratory tract [4].

In 50 % of all cases of CAP the etiology of diseases is not revealed because some of pathogens are not cultivable on artificial culture media.

Table 1
Microorganisms isolated from patients with CAP during 2007-2009

№	The name of pathogen	Absolute number	%
1.	Streptococcus group A	28	39
2.	Staphylococcus aureus	8	11
3.	Staphylococcus epidermidis	7	9,7
4.	Staphylococcus varneri	1	1,4
5.	Staphylococcus haemolyticus	1	1,4
6.	Enterococcus spp.	1	1,4
7.	Neisseria perflava	6	8,3
8.	Neisseria mucosa	2	2,8
9.	Neisseria sicca	2	2,8
10.	Candida spp.	5	7
11.	Moraxella spp.	3	4,1
12.	Enterobacter spp.	4	5,5
13.	Branhamellacataralis	1	1,4
14.	Haemophilus influenza	1	1,4
15.	Aeromonas spp.	1	1,4
16.	Klebsiellarinoskleromatis	1	1,4

The aim of investigation is to study the etiology of community-acquired pneumonia and antibiotic resistance of isolated pathogens.

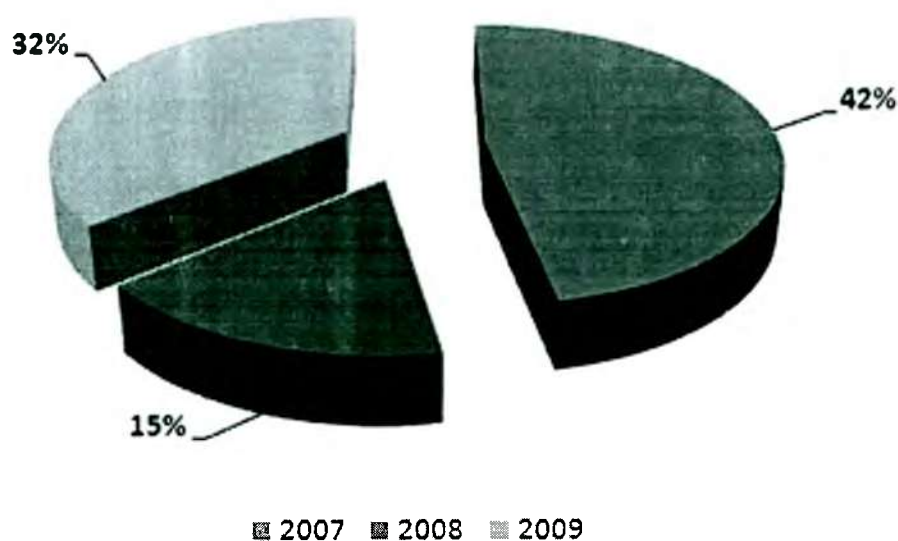
Material and Methods

Sputum samples are obtained from 106 adult patients with CAP and sent to microbiology lab. Examination of specimens is done by cultivation on various culture media and by isolation of microorganisms in pure culture. Isolated microbes are identified by conventional methods.

Antibiotic susceptibility testing of isolates is made by disk-diffusion method on Muller-Hinton media.

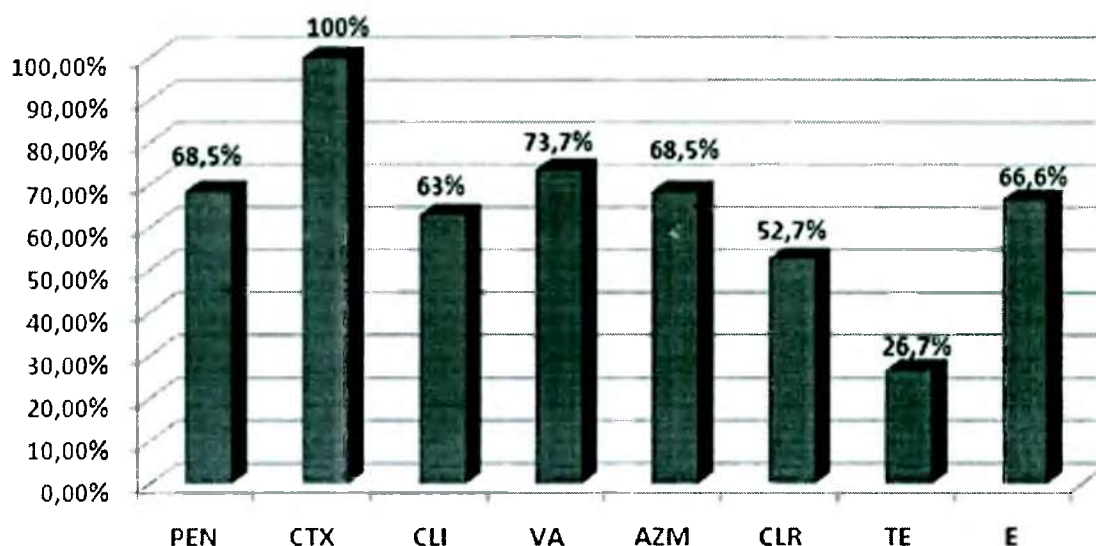
Results and Discussions

The analysis of microbial structure of isolated microorganisms showed that the main role in development of CAP belong to the bacteria of Streptococcus group A, which are detected in 39% of all cases. Other types of pathogens are identified in low number. The microbial structure of isolates is



The level of mixed infections in patients with CAP

Fig. 1



The antibioticsusceptibility of Streptococcus group A isolated in 2007-2009

Fig. 2

shown on the table 1 below.

Received results have divergence with other scientific sources. In accordance with clinical protocols on pulmonology adopted in Kyrgyz Republic the main pathogen of CAP is *S.pneumoniae* (30-50%) [5]. Probably it is due to incorrect specimen collection, lack of test systems and equipment, and difficulties in identification of *Streptococcus* spp..

From 72 (68%) patients are isolated a single pathogen as an agent of diseases, and in 32% of cases are mixed infections. The combinations in mixed infections are of different microorganisms. In the most of cases there are mixture of Gram-positives and Gram-negatives or bacteria and fungi particularly *Candida* spp.. During the frame work the number of mixed CAP are different year by year and given in figure 1. The highest level of mixed infections is in 2007, and lowest in 2008. According our results the importance of combined infections is decreasing for years and years.

The study of antibiotic resistance of *Streptococcus* group A revealed that those strains are highly resistant to tetracycline 73,3%, moderate resistance to clarithromycin 47,3%, clindamycin 37%, erythromycin 33,3% , penicillin 31,5% the result antibiotic susceptibility testing is present in figure 2.

At the same time studied microorganisms showed highest susceptibility to cefotaxime 100%,

vancomycin 73,7%, penicillin 68,5%, azytromycin 68,5% and erythromycin 66,6%.

Conclusions

Streptococcus group A play a key role in causing community acquired pneumonia.

The role of mixed infections is decreasing year by year.

For empirical treatment of CAP is recommended cefotaxome, penicillin and vancomycin.

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