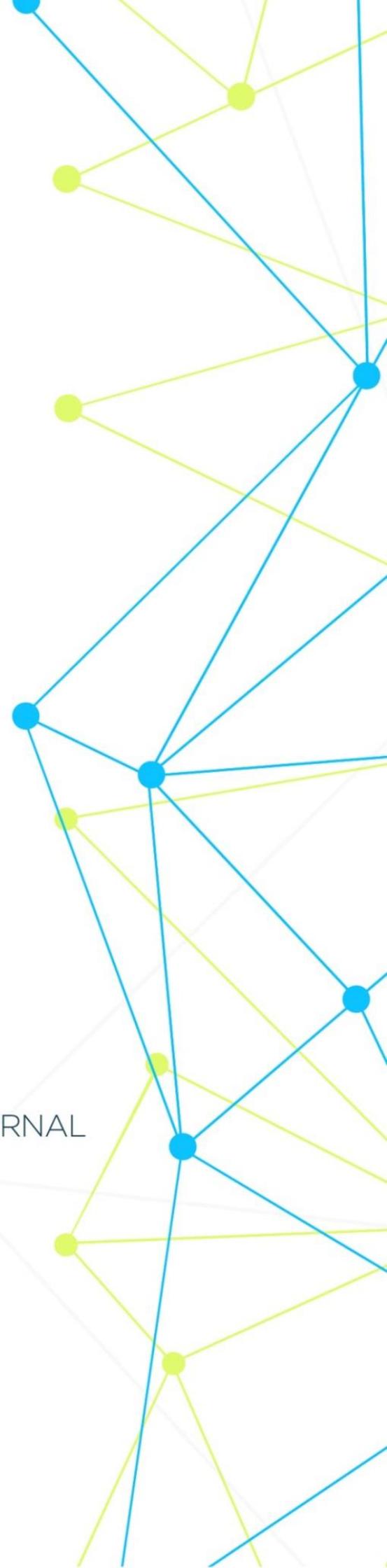


INTERNATIONAL MEDICAL SCIENTIFIC JOURNAL

ART OF MEDICINE



Founder and Publisher **North American Academic Publishing Platforms**

Internet address: <http://artofmedicineimsj.us>

E-mail: info@artofmedicineimsj.us

11931 Barlow Pl Philadelphia, PA 19116, USA +1 (929) 266-0862

Chief Editor

Dr. Pascual Izquierdo-Egea

Prof. Dr. Francesco Albano

Dr. Catherine J. Andersen

Prof. Dr. Sandro Ardizzone

Dr. Dmitriy Atochin

Prof. Dr. Antonio Aversa

Prof. Dr. Tamam Bakchoul

Prof. Dr. Pierre-Grégoire Guinot

Prof. Dr. Rainer Haak

Prof. Henner Hanssen

Roy G. Smith

Department of Molecular and Cellular Biology/Department of Medicine

Baylor College of Medicine

Houston, TX 77030, USA

Kalpesh Patel, MD

The Sydney Kimmel Comprehensive Cancer Center

Johns Hopkins Medical Institutions

Baltimore, MD, 21231, USA

Roy G. Smith

Department of Molecular and Cellular Biology/Department of Medicine

Baylor College of Medicine

Houston, TX 77030, USA

Khamdamov Bakhtiyor Bukhara State Medical Institute

Khamdamova Mukhayokhon Bukhara State Medical Institute

Available at <https://www.bookwire.com/>

ISBN: [978-0-578-26510-0](https://www.isbn-international.org/product/9780578265100)

PHARMACOTHERAPY OF COMMUNITY-ACQUIRED PNEUMONIA IN UZBEKISTAN IN PRIMARY HEALTH CARE

Khamdamova M.T., Khayitov A.N.

Bukhara State Medical Institute named after Abu Ali Ibn Sino, Bukhara,
Republic of Uzbekistan.

Abstract. Significant for the diagnosis of the complicated course of the disease are the data of X-ray examination of the lungs and laboratory parameters, which can be obtained already on the first day of the patient's hospitalization. According to our data, the most significant signs are the level of decrease in the prothrombin index, total protein, albumin, C-reactive protein and lymphocytes.

Keywords: lymphocyte, pneumonia, C-reactive protein, prothrombin index, total protein, albumin.

Community-acquired pneumonia (CaP) is a serious medical and social problem of Uzbekistan's healthcare, as it is a common pathology affecting various age groups of the population, with a continuing high incidence rate, often with a complicated and prolonged course, causing significant temporary disability and treatment costs, as well as with a fairly high mortality rate, despite the obvious progress in the treatment of the disease [1,3,5].

The current situation is also relevant for the Republic of Uzbekistan, where over the past 14 years, the incidence of CaP has increased from 5 to 15 people per 1,000 adults per year, the duration of hospital treatment has increased from 14 to 20.4 beds / day, the number of cases of temporary disability in 2016 was 0.5 per 100 employees, and the average duration of one case - 22.5 days, mortality increased from 1 to 7.5% and destructive forms of the disease became more common [2,4,6].

At the same time, the long-term persistence of bacteria in the host body is important, as well as the transition of the infectious process into a chronic form. This is provided by mechanisms of persistence of microorganisms consisting in inactivation/degradation of natural anti-infective resistance factors: lysozyme, complement system, interferon, platelet cationic protein, lactoferrin [2].

The persistence of microorganisms is due to the state of their indifference to the influencing physical and chemical factors of the external nature, ensuring stable contrasting effects in the biocenosis and preserving the viability of the population by acquiring resistance to the protective mechanisms of the host [2,4,6]. The human lungs are the largest by area (80 m² on exhalation and 120 m² on inhalation) membrane that separates the macroorganism from environmental factors. Therefore, there are various protective systems that prevent infection from entering the lung tissue [3,5,10].

Cellular mechanisms of nonspecific protection play an important role mainly in the respiratory department of the lungs. The main cells here are leukocytes, labrocytes, eosinophils and macrophages. With massive bacterial aggression, these cells release chemokines such as IL-8, TNF- α , IL-1, MCP-1, components of the complement system, as well as G-CSF, which is important in the development of pneumonia [9]. Humoral protection factors are carried out by immunoglobulins A and

G, lymphoid cells, macrophages of lymphoid tissue and lymph nodes of the lungs and bronchi. IgA provides agglutination of bacteria and neutralizes their toxins. IgG in the lower respiratory tract agglutinates and opsonizes bacteria, activates the complement system, thereby accelerating the process of chemotaxis of neutrophils and macrophages [1,8].

Even less common is the variant of the spread of infection from an extrapulmonary focus and the direct spread of the pathogen from nearby affected tissues or as a result of infection with penetrating chest wounds [2,10].

Thus, pneumonia is the result of a violation of the protection mechanisms of the tracheobronchial tree and (or) a decrease in the resistance of the macro organism [3]. The causative agents of CaP can be though most cases of pathology are caused by four infectious agents, the etiological spectrum depends on the patient's age, concomitant pathology and severity of the disease. In recent years, there has been a rapid increase in the resistance of pneumonia pathogens to antibacterial drugs all over the world.

Pharmacotherapy of CaP in Uzbekistan is an urgent problem, especially in primary health care [1,8]. Modern recommendations have been developed for the empirical treatment of this pathology in outpatient settings [7,9], however, in polyclinic medical and preventive institutions, the choice of starting ABP is often erroneous, antibiotics (AB) continue to be used, which are not officially recommended [10]. The situation is aggravated by the fact that on an outpatient basis, the medicine must be purchased by patients at their own expense and the low standard of living of certain categories of the population affects the choice and consumption of medicines in favor of cheaper, but less effective drugs. A large number of works are devoted to various aspects of the EAP, but the relevance and vastness of the problem under consideration, the unresolved nature of many theoretical and practical issues forces researchers to turn to it again and again.

The activity of T- and B-lymphocytes, antibodies and cytokine functions determine the severity of the inflammatory process in the lungs, including its outcome [1,9]. Cytokines can play both a protective role and contribute to the destruction of lung tissue, lead to increased inflammation and violation of the body's defenses [2,6].

The course of pneumonia and its outcome are determined by the body's ability to respond to the pathogen by synthesizing the defining protective interleukins, which include interferon-gamma, IL-12, IL-6 and, to a lesser extent, IL-18. With a decrease in IL-12 production, repeated pneumonia may occur, since it plays a leading role in antibacterial protection against a number of pathogens.

The protective effects of IL-12 are caused by interferon-gamma dependent mechanisms: stimulation of cytotoxic activity, T-cell infiltration and enhanced production of nitric oxide. Interferon-gamma and IL-4 are involved in the process of restoring epithelial cells of the respiratory tract mucosa in case of lung damage. IL-18, being a synergist of IL-12, together with interferon-gamma, play a crucial role in the outcome of the inflammatory process in the lungs [7,9].

Insufficiently studied and interpreted ambiguously emerging

changes in the immune system with a violation of factors of intercellular interaction in the presence of an inflammatory process in the lungs. The questions of the significance of the status and the ratio of proinflammatory and protective cytokines for the diagnosis of the severity of pulmonary inflammation, their influence on the course and outcome of the disease remain unclear. Therefore, the study of humoral and cellular immunity factors is important for understanding their influence on the course of the pathological process in community-acquired pneumonia and the individual prognosis of the patient.

Thus, the diagnosis of microorganisms, treatment and prevention of diseases caused by them are topical, socially important and complex problems. In our country, it is necessary to significantly improve the quality of microbiological diagnostics and ensure the transition of laboratories to work according to modern standards.

After analyzing the materials of domestic and foreign literature, we can conclude that it is necessary to further study the pathogenetic aspects of VP, the importance of humoral and cellular factors of immunity in the presence of inflammation in the lung tissue. The research is aimed at studying the composition of pathogenic microorganisms in order to obtain up-to-date data on the pathogens of VP.

The purpose of the study: To study the features of the etiology, elements of pathogenesis, clinical picture and nature of outpatient initial antibacterial therapy of community-acquired pneumonia in Uzbekistan to optimize the therapeutic tactics of patient management in primary health care.

Materials and methods of research. The study from 2017 to 2021 included 898 patients with VP aged 16 to 85 years (average age 45.8 + 10.2 years), born and permanently (more than 15 years) living in Uzbekistan. There were 562 men (62.6%), 336 women (37.4%) In 8 cases (0.9%) the disease was fatal. The diagnosis of pneumonia was carried out in accordance with the requirements of the standard of medical care for patients with pneumonia, the formulary system and national recommendations for the diagnosis, treatment and prevention of CaP in adults, prepared by a group of Uzbek experts.

We analyzed the spectrum of starting ABPS that were used for the treatment of CaP by primary care physicians according to the outpatient records of 1,264 patients with this pathology treated in polyclinic conditions from 2017 to 2021. It turned out that penicillins and macrolides were the leading groups of all prescribed AB during the study period (43.1 and 27.8% of patients were treated with them each), other antibacterial agents fluoroquinolones, cephalosporins, tetracyclines, cotrimoxazole and aminoglycosides were used less often (they were prescribed 11.4, 8.0, 5.7, 1.2 and 0.7% of all patients, respectively). At the same time, there was an increase in the dynamics of the share of the use of the ABP group of penicillins, macrolides and fluoroquinolones, for the remaining groups of antibacterial agents, a decrease in the frequency of use was noted, which corresponds to current trends in Russian directive documents on the treatment of the disease. Amoxicillin, erythromycin and ampicillin were in the first, second and third positions in terms of frequency of use. They were prescribed 284 (22,5%), 161 (12,7%) and 159 (12.6%) patients with outpatient

pneumonia for the entire study period, respectively. The fourth place among the antibiotics most commonly used for the empirical treatment of the disease was occupied by ciprofloxacin, which was used in 123 patients with this pathology, which accounted for 9.7% of all patients included in the study. Quite often, cephalexin was prescribed by outpatient doctors - in 79 (6.3%) cases of community-acquired pneumonia, which corresponded to the fifth place in terms of frequency of use. Doxycycline was used to treat lung inflammation in 72 patients, which accounted for 5.7% of all patients included in the study, as a result of which the drug took the sixth position among the most commonly used antibiotics. Azithromycin and clarithromycin, which are among the top five best-selling ABPS in the world, in our study took the seventh and eleventh places, respectively they treated 68 (5.4%) and 32 (2.5%) cases of the disease, and Midecamycin, being prescribed to 50 (4.0%) patients, was in the ninth position. The twelfth and thirteenth places in terms of frequency of use for the treatment of the disease were shared by roxithromycin and amoxicillin/clavulanate, which were used in 31 (2.5%) cases each. Oxacillin, ampicillin, ofloxacin and cefaclor continued to be prescribed in our study, therapy with these ABPS was received 38 (3.0%), 20 (1.6%), 13 (1.0%) and 7 (0.6%) patients with outpatient pneumonia, respectively. Only since 2016, doctors have refused to use co-trimoxazole and gentamicin in the treatment of the disease, before this period they were prescribed to 15 (1.2%) and 9 (0.7%) patients. Respiratory fluoroquinolones levofloxacin and moxifloxacin were rarely used in 5 and 3 patients, which amounted to 0.4 and 0.2%, respectively, of all patients with CaP.

Thus, the spectrum of prescribed antibacterial agents for the initial empirical therapy of home pneumonia in outpatient settings in Uzbekistan often did not fit into the standards of the formulary system (the use of erythromycin, ampicillin reg os, doxycycline), the use of many ABPS (ciprofloxacin, ofloxacin, gentamicin, co-trimoxazole, cephalexin, cefaclor, oxacillin, ampicillin) was obviously erroneous, and, in addition, could contribute to the formation of antibiotic resistance of microorganisms. However, in the dynamics from 2015 to 2019, there was an improvement in the situation when primary care physicians began to use more widely recommended for the treatment of community-acquired pneumonia ABP within the penicillin group - amoxicillin (from 31.9 to 67.9%) and amoxicillin/clavulanate (from 2.8 to 8.6%), among macrolides - with improved properties (from 18.7 to 83.6%), within the group of fluoroquinolones - respiratory (from 0 to 25.0%), among cephalosporins - cefuroxime axetil (from 5.6 to 37.5%), the use of ampicillin reg 08 (from 38.9 to 17.3%), oxacillin (from 13.9 to 2.5%), ampicillin (from 9.7 to 1.2%), erythromycin (from 74.4 to 16.4%), ciprofloxacin (from 93.3 to 66.7%) decreased within the corresponding groups) and doxycycline (from 7.5 to 4.0%), and since 2004, the administration of co-trimoxazole and gentamicin has been discontinued, which corresponds to the recommendation documents for the treatment of pathology. Taking into account the high etiological significance of pneumococcus in the development of CaP in the region and its annually increasing resistance to penicillin, including in combination with tolerance to erythromycin and tetracycline (especially in elderly patients), the data obtained serve as the basis for planning a set of measures

to improve the pharmacotherapy of CaP and prevent the development of antibiotic resistance in Uzbekistan. The above also indicates the need for deeper and more systematic training of primary care physicians on the issues of antibacterial therapy of the disease, since the vast majority of patients with CaP for the first time seek medical help in outpatient clinics, where they begin and often end treatment. It is at this level that doctors face the greatest difficulties in curating this category of patients as diagnostic (it is difficult to conduct dynamic laboratory and X-ray examination) and of a therapeutic nature (limiting the possibility of prescribing effective antibacterial agents due to the low income of certain categories of the population), taking into account the situation of the purchase of medicines by patients during outpatient treatment at their own expense, the orientation of district therapists and general practitioners in relation to the "cost-effectiveness" of ABT is also important.

Our study showed that the price aspect was taken into account when prescribing starting antibacterial treatment to patients with CaP by outpatient doctors in the region, however, it was not decisive in choosing an antibiotic, since modern effective expensive medicines were also present among the frequently prescribed drugs. This indicates the orientation of doctors in the pharmaco-economic aspects of ABT, since the appointment of a cheaper, but less effective drug inevitably leads to large final treatment costs.

Thus, in order to optimize the treatment of outpatient pneumonia in Uzbekistan, it is necessary to regularly increase the level of knowledge of primary care physicians (district therapists, general practitioners) on the issues of adequate modern antibacterial therapy of the disease in outpatient settings.

REFERENCES

1. Mosin I.V., Sanginov A.B., Bazhanov A.A. Complex treatment of extended cicatricial stenoses of the upper third of the trachea // *Surgery* 2011; 2: 37-39.
2. Saidjonovna R. D. Method For Improving The Prevention Of Dental Caries In Children Using The Device Aerodent // *Web of Scientist: International Scientific Research Journal*. – 2021. – T. 1. – №. 01. – C. 26-32.
2. Fridel G., Wurst H. et al. Die endoluminale Therapie in Trachea und Bronchus // *Chirurg* 2001; 72: 1119 - 1129.
3. Shema-Didi L., Sela S., Ore L., Shapiro G., Geron R., Moshe G., et al. One year of pomegranate juice intake decreases oxidative stress, inflammation, and incidence of infections in hemodialysis patients: A randomized placebo-controlled trial // *Free Radic Biol Med*. 2012; 53:297–304.
4. Victor van der Meer. Diagnostic value of C reactive protein in infections of the lower respiratory tract: systematic review. // *BMJ*. – 2005; 331: 26 (2 July), doi: 10.1136.
5. Khamdamov I.B., Khamdamov A.B. Differentiated approach to the choice of hernioplasty method in women of fertile age (Clinical and experimental study)

//New day in medicine. 2021. №6 (38/1).- P.112- 115. <https://newdaymedicine.com/index.php/2021/12/12/sfeef/>

6. Khamdamov I.B., Khamdamov A.B. Classification and properties of mesh explants for hernioplasty of hernial defects of the anterior abdominal wall (review) // Biology and integrative medicine. ISSN2181-8827 2021. №5 -septemberoctober (52).-P.12-22

7. Khamdamov I.B. Evaluation of the efficiency of an improved approach in the treatment of anterior abdominal wall hernias in women of fertile age // American Journal of Medicine and Medical Sciences 2022, 12(5): 584-588 DOI: 10.5923/j.ajmms.20221205.27.

8. Khamdamov B.Z., Nuraliev N.A. Pathogenetic approach in complex treatment of diabetic foot syndrome with critical lower limb ischemia // American Journal of Medicine and Medical Sciences. -2020. - T. 10. -№1. -P. 17-24.

9. Khamdamov B. Z. Indicators of immunocytocine status in purulent-necrotic lesions of the lower extremities in patients with diabetes mellitus // American Journal of Medicine and Medical Sciences. -2020. - T. 10. -№7. -P. 473-478.

10. Axropova III. B. Diabetic polyneuropathy in type 1 diabetes mellitus // Journal of Neurology and Neurosurgical Research. – 2021. – №. Special 1.

11. Winn W. C., Chandler J., Chandler F. Bacterial infections. // Pulmonary Pathology ed. D. H. Dail. S. P. Hammar. 2-nd ed. — New York: Springer Verlag, 2013. — P. 255-330.