

RESULTS OF THE STUDY OF IMMUNOLOGICAL CHANGES IN COMPLEX SURGICAL TREATMENT OF BRONCHIECTASIS

Akhmedov R. M.

Hikmatov J. S.

Bukhara State Medical Institute

Abstract

Lack of immunity of the body against bacterial infection is the main condition for the development of bronchiectasis. In addition, many patients have no clear cause and are described as idiopathic. The study investigated the improvement of postoperative clinical results using methods of immunostatus correction in the complex surgical treatment of bronchiectasis. 118 patients treated for bronchiectasis in 2019-2023 participated in the study. The results of the study showed that the use of immunotherapy in combination with conventional treatment in complex surgical treatment of patients with bronchiectasis leads to high efficiency.

Keywords: Bronchoectatic disease, immunocorrection, cytokines, immunoglobulins.

Introduction

The prevalence of bronchiectasis (BE) is not clearly defined in the literature. Weiker et al. reported that between 340,000 and 522,000 adults in the United States were treated for bronchiectasis, and 70,000 adults were newly diagnosed with bronchiectasis in 2013 (Weycker D., 2016) . Another study shows that in 2012, there were more than two million adult patients with bronchiectasis worldwide, and this number is expected to exceed three million by 2020 (Polverino E., 2012) . From an immunological point of view, bronchiectasis is of great interest because it allows us to understand the mechanisms of immunodeficiency and the subsequent persistent inflammatory response to bacterial infection. It also provides an opportunity to manipulate the immune response to improve patient outcomes. It should be noted that there are many different factors that can contribute to the development of bronchiectasis (after infections , immunodeficiency , dysfunction of the mucous membrane, systemic inflammatory diseases, airway obstruction), and their pathogenesis is not fully understood (King PT., 2018).

Purpose of the study:

Improving clinical outcomes of the postoperative period using methods of correcting the immune status in the complex surgical treatment of bronchiectasis

Materials and methods:

The study was conducted in 2019-2023 at the Bukhara Regional Multidisciplinary Medical Center and the Republican Specialized Scientific and Practical Medical Center of Surgery named after academician V. Vakhidov. 118 patients with bronchiectasis (BE) were examined. Of these, 47



patients were male (39.8%) and 71 patients were female (60.2%). The average age was 38.2 ± 2.2 years.

The study included 52 patients in the main group and 66 patients in the comparison group. All patients received standard treatment, including antibiotics (depending on microbial sensitivity) and bronchodilators (inhalations of ipratropium bromide + fenoterol at a dose of 500 mcg through a nebulizer 3-4 times a day). Sanation fibrobronchoscopy was also performed for local therapy. The main group (52 patients) simultaneously received immunotherapy. Sanation fibrobronchoscopy procedures were performed at intervals of 3-4 days; The course of treatment lasted from 3 to 6 sessions depending on the nature and size of bronchial obstruction.

In the course of the study, we used the drug Likopid® for immunotherapy in patients of the main group. It contains glucosaminylmuramyl dipeptide (GMDP). It is available in tablet form. The drug is used in the complex treatment of diseases accompanied by cases of secondary immunodeficiency in adults: acute and chronic purulent-inflammatory diseases of the skin and soft tissues, including purulent-septic complications after surgical interventions. The drug is used in the morning half an hour before meals.

To determine the concentration of cytokines, sputum was taken from patients, and the studies were carried out using ELISA. In this case, the concentrations of interleukin-4 (IL-4) and interleukin-8 (IL-8) were determined using test systems. To determine humoral immunity, the concentration of immunoglobulins IgA, IgM, IgG in the patient's sputum was determined using ELISA. In this case, test kits were used.

The results of the study were entered into the electronic matrix of the MS Excel-XP program. Statistical methods include the calculation of mean values (M) and their variation characteristics (standard error - SE, standard deviation - SD). Based on the principles of evidence, the reliability of all calculated statistical data ranged from $p < 0.050$ to $p < 0.001$. All statistics below $p > 0.050$ were considered unreliable.

Results of the study:

During the study, the concentration of cytokines that cause inflammation and counteract it is determined in the patient's sputum, the course of the inflammatory process in the body changes in accordance with the outcome of the disease, if the concentration of one of them exceeds the concentration of the other, this result indicates that the inflammatory process is intense. The fact that during our study, the cytokine IL-8, which determines the immunological status, quantitatively exceeds the anti-inflammatory IL-4, indicates the obvious development of this pathological condition. In other words, taking into account the level of inflammation, IL-4 and IL-8, which determine the immunological status, were recommended as additional diagnostic and prognostic immunological criteria.

Determination of the concentration of primary immunoglobulins (I gM , IgG, IgA, I gE) in the sputum of patients with bronchiectasis showed that in patients in the main and comparative groups the directions of their shift and tendency to multiply were almost the same. While the amount of IgA increased by 1.25 and 1.02 times ($p < 0.05$) compared with the indicators of the control group in both groups, the concentration of I gM increased by 1.15 times ($p < 0.05$) and 1.05 times ($p > 0.05$), respectively, while the same IgG indicators significantly increased by 2.12 and 2.14 times ($p < 0.005$). Despite the pathogenetic significance of both immunoglobulins for the studied



nasal unit, we admit that they are diagnostic and are not of great importance for determining the course of the disease and the prospects for its termination.

Patients with the underlying disease were characterized by significantly higher levels of anti-inflammatory cytokines (IL-4) than those in the control group. The intergroup gap in IL-4 was 1.98 and 2.05 times, respectively. For the first time among all the indicators, differences in cytokine parameters were found between patient groups (the main and withdrawal groups) ($p < 0.05$, $p < 0.005$). This is recommended as a new look at the pathogenesis of the disease, the role of the immune system in its formation and development. Both cytokines (IL-4 and IL-8) were recommended as additional prognostic criteria for practical healthcare in determining the future and termination of bronchiectasis in patients.

The obtained results showed that IL-4 and IL-8 were within the generally accepted norm or reference values in patients in the observation group and showed a result close to the practical one, even after treatment - 11.12 ± 0.71 ng/ml and 46.31 ± 1.59 ng/ml, respectively, for the studied parameters.

Determination of acute immunoglobulin (IgM, IgG, IgA, IgE) concentration in sputum of patients with bronchiectasis and comparison showed that the direction of change and the tendency of increase in sputum of patients with bronchiectasis are almost different. The amount of IgA increased by 1.25 and 1.02 times ($p < 0.05$) compared with the number of patient folds in both sexes, and the concentration of IgM increased by 1.15 times ($p < 0.05$) and 1.05 times ($p > 0.05$) increased, papameptaps IgG increased to 2.12 and 2.14 cards at a reliable level ($p < 0.005$).

During the study, the concentration of IgE in the patient's sputum, in contrast to IgA, I gM and Ig G , changed so much that it attracted attention. Unlike other immunoglobulins, their amount differed not only from the control group, but also among comparable groups.

In the main and comparative groups, it was noted that this indicator increased even more - 167.58 ± 6.67 ng/ml ($p < 0.005$ by 6.85 times). A significant increase in the IgE content (by 6.33 and 6.85 times) in the sputum of patients with bronchiectasis indicated an increased prevalence of the disease in the body.

In the study, complex surgical treatment of bronchiectasis, including sanative fibrobronchoscopy and immunotherapy, led to a change in the nature of separation in the bronchial tree in patients of the main group. In this group, the number of patients with mucopurulent discharge decreased by 35.9%, the number of patients with mucopurulent discharge increased by 1.9%, and in 34.1% of patients, discharge from the bronchial tree completely disappeared.

Conclusion:

The use of immunotherapy in combination with traditional treatment in the complex surgical treatment of patients with bronchiectasis has achieved high efficiency and is considered pathogenetically justified and highly effective in the treatment and prevention of the disease, so it has become possible to recommend it for widespread use in clinical practice.

References:

1. Akhmedov R.M., Khamdamov B.Z. Evaluation of amputation methods at the tibia level in severe forms of diabetic foot syndrome. *Biology va tibbiyot muammolari*. Samarkand, 2019, No. 4 (113). – pp. 29-32.



2. Akhmedov RM, Khamdamov BZ, Khamdamov IB Assessment of methods of amputation at the level of the lower leg in severe forms of diabetic foot syndrome //Problems of biology and medicine. - Samarkand, 2019. No. 4 (113). –Pp. 29-32
3. Davlatov S. S., Khamdamov B. Z., Teshaev S. J. Neuropathic form of diabetic foot syndrome: etiology, pathogenesis, classifications and treatment (literature review) //Journal of Natural Remedies. – 2021. – Т. 22. – №. 1 (2). – С. 147-156.
4. Davlatov, S. S., & Alieva, S. Z. (2018, June). Innovative and hybrid technologies in the treatment of endotoxemia in purulent cholangitis. In Materials of the scientific-practical conference with the international section" Parasitic and infectious diseases in the local pathology of the Central Asian region" Samarkand (p. 148).
5. Gaziev, K. U. (2022). Adaptive Approach In The Treatment Of Elderly And Senile Patients With Postoperative Ventral Hernias. Journal of Pharmaceutical Negative Results, 4613-4616.
6. Hikmatov J.S. "Bronchiectasis disease: etiology, pathogenesis, modern diagnosis and treatment." Новости образования: исследование в XXI веке 1.3 (2022): 1048-1064.
7. Hikmatov J.S. (2023). Use of the MOS SF-36 questionnaire in the assessment of quality of life in surgery. Journal of applied medical sciences, 6(4), 49-55.
8. Hikmatov J.S. (2023). Use of the mos sf-36 questionnaire in the assessment of quality of life in surgery. Journal of applied medical sciences, 6(4), 49-55.
9. Ikhtiyarova G. A. et al. Pathomorphological changes of the placenta in pregnant women infected with Coronavirus COVID-19 //International Journal of Pharmaceutical Research (09752366). – 2020. – Т. 12. – №. 3.
10. Kasymov S. Z., Davlatov S. S. Hemoperfusion as a method of homeostasis protection in multiple organ failure syndrome //Академический журнал западной Сибири. – 2013. – Т. 9. – №. 1. – С. 31-32.
11. Khamdamov B. Z., Ganiev A. A., Khamdamov I. B. The role of cytokines in the immunopathogenesis of acute pancreatitis //Journal of Survey in Fisheries Sciences. – 2023. – Т. 10. – №. 2S. – С. 3949-3958.
12. Khamdamov B.Z. A method for correcting critical ischemia of the lower extremities in the treatment of purulent-necrotic complications of diabetic foot syndrome. Journal of Biomedicine and Practice. Tashkent 2020, Special issue 2. Part 8. - WITH. 968-977.
13. Khamdamov B.Z. Comparative analysis of the effectiveness of the results of complex treatment of diabetic foot syndrome with critical ischemia of the lower extremities using perfortan perfusion. Electronic periodical scientific journal "Sci-article.ru", No. 14 (October) 2014. P. 80-84.
14. Khamdamov B.Z., et al. "Method of prevention of postoperative complications of surgical treatment of diabetic foot syndrome." European science review 9-10-2 (2018): 194-196.
15. Khamdamov BZ, Nuraliev NA Pathogenetic approach in complex treatment of diabetic foot syndrome with critical lower limb ischemia. American Journal of Medicine and Medical Sciences, 2020 10 (1) 17-24 DOI: 10.5923/j.20201001.05.
16. Khamdamov, B., & Dekhkonov, A. (2022). Clinical and laboratory parameters of the wound process complicated by the systemic inflammatory response syndrome in patients with diabetes mellitus. Journal of education and scientific medicine, 2(3), 25-29. Retrieved from <https://journals.tma.uz/index.php/jesm/article/view/349>



17. Khamidova N. K. et al. Morphometric characteristics of parameters of physical development of children with various heart diseases // *湖南大学学报 (自然科学版)*. – 2021. – T. 48. – №. 7. – C. 137-142.
18. Khikmatov, J. S., Khudaibergenov Sh. N., Khamdamov B. Z., Ismatov J. K. "Bronchiectasis (literature review)." *Scientific progress* 2.7 (2021): 94-108.
19. Khikmatov, J.S., Khudaibergenov, S.N., Khamdamov, B.Z. and Ismatov, J.K., 2021. Bronchiectasis (literature review). *Scientific progress*, 2(7), pp.94-108.
20. Nuraliev N.A., Khamdamov B.Z. Comparative assessment of the immune status of patients with diabetic foot syndrome with critical ischemia of the lower extremities. *Bulletin of the Tashkent Medical Academy*. Tashkent, No. 1. - 2020. – P. 132-138.
21. Redondo M., Keyt H., Dhar R., Chalmers J. D. Global impact of bronchiectasis and cystic fibrosis. *Breathe*. 2016;12(3):222–235.
22. Sabirov D.M., Oltiev U.B., Khamdamov B.Z., Dekhkonov A.T. The choice of anesthesia method in the surgical treatment of purulent-necrotic complications of the lower extremities in patients with diabetes mellitus. *Biology va tibbiyot muammolari*. 2021. No. 2 (127). - WITH. 118-121.
23. Shukurov E. M. et al. Treatment of Open Fractures of The Long Bones of The Lower Extremities with External Fixation Devices // *International Journal of Pharmaceutical Research* (09752366). – 2020. – T. 12. – №. 3.
24. Sodikova S. A., Zoyirov T. E., Davlatov S. S. Dental Awareness and Oral Health of Pregnant Women (Literature Review) // *International Journal of Pharmaceutical Research* (09752366). – 2020. – T. 12. – №. 3.
25. Sulaymonovich D. S., Zarifivich K. B. The state of regional blood flow in diabetic foot syndrome // *Problems of biology and medicine*. – 2022. – №. 4. – C. 137.
26. Teshayev O.R., Murodov A.Kh., Sadykov R.R., Khamdamov B.Z. Improved results of treatment of purulent wounds with complex use photodynamic therapy and CO2 laser in the experiment. *European Science Review*. Austria, Vienna 2016 March-April No. 3-4. - R. 185-189.
27. Teshayev S. J., Khudoyberdiyev D. K., Davlatov S. S. The impact of exogenous and endogenous factors on the stomach wall, macro-, microscopic anatomy of newborn white rats // *International Journal of Pharmaceutical Research* (09752366). – 2021. – T. 13. – №. 1.
28. Weycker D, Edelsberg J, Oster G, Tino G. Prevalence and Economic Burden of Bronchiectasis. *Clinical Pulmonary Medicine*. 2005;12(4):205-20.
29. Khikmatov J.S., Khudaibergenov S.N., Khamdamov B.Z. Ismatov J.K. 2021. Bronchiectasis (literature review). *Scientific progress*, 2(7), pp.94-108.
30. Ochilov ME, Ismatov ZhK, Khikmatov ZhS, Tagaev FH. Opkaning bullosis emphysema va spontaneous pneumothorax zamonaviy tibbiy technology learning roles (amaliyotda kuzatilgan holat).“Uzbekistan Surgery” magazine . 2016.
31. Khudaibergenov Sh. N., Eshonkhodjaev O.D., Ismatov Zh.K. Khikmatov Zh.S. 2021. Improving the Results of Combined Pleurodesis During Video-Assisted Thoracoscopic Interventions in Patients with Bullous Lung Disease. *Central Asian journal of medical and natural sciences*, pp.343-348.

