



PECULIARITIES OF THE COURSE OF LUNG ABSCESS IN PATIENTS AFTER COVID 19 ON THE BACKGROUND OF DIABETES MELLITUS.

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Article history:	Abstract:
Received: April 4 th 2023 Accepted: May 6 th 2023 Published: June 6 th 2023	Recently, given the changes that have occurred due to the COVID 19 pandemic, the developed methods and adequate antibacterial treatment have not been able to provide a good result for the treatment of patients with lung abscess on the background of diabetes mellitus in the post-COVID period. As we know, a lung abscess on the background of diabetes mellitus is much more difficult, and given that the patient has had COVID 19, then in this case the clinical picture will be more complex. The management and treatment of patients with this pathology requires an individual approach and a complex of therapeutic measures.

Keywords: COVID19, lung abscess, diabetes mellitus.

INTRODUCTION.

Lung abscess is a non-specific inflammation of the lung tissue, as a result of which melting occurs with the formation of purulent-necrotic cavities. During the formation of the abscess, fever, thoracalgia, dry cough, intoxication are noted; during the opening of the abscess - cough with copious discharge of purulent sputum. The diagnosis is made on the basis of a combination of clinical, laboratory data, x-ray picture. Treatment involves massive antimicrobial therapy, infusion-transfusion therapy, a series of sanitation bronchoscopy. Surgical tactics may include drainage of the abscess or lung resection. Drainage of a purulent cavity, its release from pathological contents is pathogenetically substantiated, an integral component of the treatment of patients with acute infectious destructions of the lungs. As a result, the conditions necessary for the subsidence of the inflammatory process, tissue regeneration with the formation of a scar and the recovery of the patient are achieved. Until now, the method of transthoracic drainage of destruction cavities in the lungs is actively used for certain indications. The technique of transthoracic drainage is as follows. After a careful projection orientation of the focus of suppuration in the lung on the chest wall in the place of the closest fit of the abscess, a puncture is performed. Evidence of the correct position of the puncture needle is the receipt of pus from the abscess cavity. After aspiration of purulent contents, the depth of the abscess from the skin is measured. At the base of the puncture needle,

a small incision is made in the skin and subcutaneous tissue, through which a trocar is passed carefully, strictly along the needle, to a predetermined depth. The mandrin of the trocar is removed, and a drainage tube is passed through its cannula into the abscess cavity, which, after removing the puncture needle and cannula, is fixed to the skin with a silk suture. The diameter of the trocar and drainage is chosen depending on the size of the abscess cavity. PVC tubes with an inner diameter of 0.3 to 0.6 cm are most often used as drains. The course of the disease after drainage in most patients is usually characterized by a rapid improvement in the general condition due to a decrease in purulent intoxication after emptying the abscess. Permanent sanitation of the abscess through drainage stops acute processes in the cavity and draining bronchi, which leads to the restoration of their patency. The introduction of an antiseptic solution with proteolytic enzymes into the abscess cavity helps to liquefy thick pus and detritus, which, when coughing, are released through drainage and draining bronchi. In some cases, there is a discharge through the drainage tube of small sequesters of the lung tissue. Usually, copious purulent discharge is released through the drainage during the first three to four days. In the next two to three weeks, a moderate amount of mucopurulent contents departs. By the end of the fourth week, the contents stop separating completely. Until recently, one of the indications for transthoracic drainage of large cavities of destruction is the formation of sequesters of devitalized lung tissue in



them. Such sequesters dissolve on their own extremely slowly, and their prolonged presence in the destruction cavity (as a kind of foreign body) leads to thickening and sclerosis of its walls, and supports inflammation. Often sequesters, as a kind of valve, cover the bronchus approaching the purulent cavity and prevent the restoration of bronchial drainage. Then the introduction of proteolytic enzymes through the drainage tube contributes to the melting and elimination of sequesters in the cavity and eliminates the unfavorable changes supported by them. In some cases, external drainage of the cavities of purulent destruction in the lung can be supplemented with abscessoscopy, its implementation immediately after passing the trocar through the chest wall, before inserting the drainage tube into the abscess cavity, allows for an endoscopic assessment of the nature of the destructive process in the lung. At the same time, it is possible to examine the contents of the purulent cavity, to establish the presence and caliber of the bronchi involved in the pathological process. If sequesters are found in the destruction cavity, small ones can be removed, and larger ones can be fragmented and completely removed during repeated abscessoscopy. In modern conditions, when the endovideosurgical technique is developing more and more intensively, the use of this method seems to be more and more promising, especially for gangrenous abscesses with large lung tissue sequesters. In an effort to reduce the trauma of drainage of purulent cavities in the lung according to Monaldi, especially in cases of small abscesses, a method of transthoracic drainage according to Seldinger was proposed with a thin tube along a plastic conductor-vein, previously introduced into the pathological focus through a thick needle. However, this technique turned out to be of little use for the treatment of the vast majority of acute purulent destruction of the lungs. Thin drainage according to Seldinger significantly complicates the implementation of permanent sanitation of the purulent cavity: it is bent, clogged with thick pus. The likelihood of complications, as it turned out, did not decrease with this method and it was not widely used. Transthoracic drainage of acute purulent-destructive cavities in the lungs according to Monaldi is still used both in our country and abroad. Despite many years of experience in its application, a general opinion on the effectiveness of the method has not yet been formed. Differences in the interpretation of the results of treatment are determined by both the variety of

pulmonary suppurations and the frequency and nature of the observed complications. Diabetes mellitus is a chronic metabolic disease in children or adults, which consists in a deficiency of one's own insulin along with an increase in blood glucose levels. The disease is accompanied by weakness, constant thirst, poor healing of wounds on the skin, reduced immunity, and is complicated by obesity, arterial hypertension, heart and kidney failure. Diabetes mellitus, affecting almost all systems of the human body, complicates the course of many diseases, including infectious ones. Patients with diabetes are at risk for COVID-19. However, as scientists note, the cause of the unfavorable course of coronavirus infection is not the very fact of the presence of diabetes, but the high level of blood glucose that is observed in patients who do not control the course of the disease. The most vulnerable categories of people susceptible to this disease are patients with severe chronic diseases such as heart and vascular diseases (ischemic heart disease (IHD), heart failure, arterial hypertension, cerebrovascular disease), chronic obstructive pulmonary disease (COPD), chronic kidneys and, of course, diabetes mellitus (DM). An analysis conducted by different groups of scientists from China, Italy, and the United States showed a unequal incidence of confirmed SARS COV-2 infection in diabetic patients. Thus, according to the Centers for Disease Prevention and Control, the incidence of diabetes among patients with COVID-19 was 5.3% of 20,892 patients in China, 10.9% of 7,162 patients in the United States, and 35.5% of 355 patients in Italy.

OBJECTIVE: To improve the results of treatment of patients with purulent-destructive lung diseases against the background of diabetes mellitus who underwent COVID 19.

MATERIALS AND METHODS.

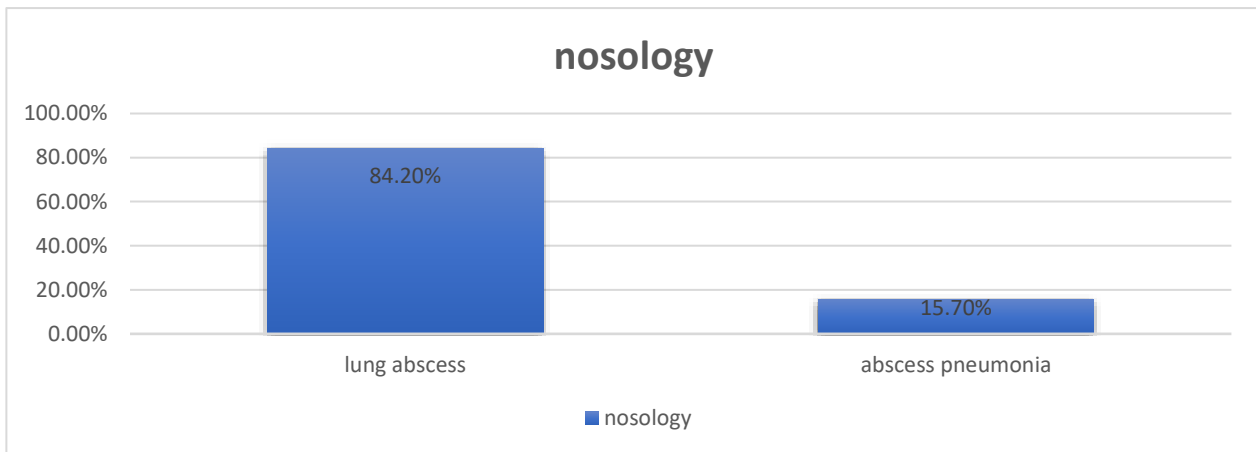
To conduct this study, we studied 19 patients with purulent-destructive lung diseases on the background of diabetes mellitus, who had pneumonia in the field of COVID-19 disease. The patients were hospitalized at the Republican Center for Purulent Surgery at the TMA clinic from September to October 2020. Patients who received inpatient treatment in the clinic for 2 months were under active outpatient monitoring. In general, patients went to the emergency clinic in serious and extremely serious condition and were hospitalized on an emergency basis - 16 (84.2%). It should be noted



that all patients received inpatient treatment in other medical institutions and were transferred to our clinic for further treatment. The mean age of the patients was 42.7 ± 9.2 years. Of the 19 patients, there were 9 (47.3%) women and 10 (52.6%) men. According to nosology, the distribution of patients looked like this: lung abscess - 16 (84.2%), abscessing pneumonia - 3 (15.7%) (pic.1). At the time of admission, in 2 (10.5%) cases, the patients were transferred to the intensive care unit due to an extremely serious condition. In most cases, patients on admission complained of an increase in body temperature up to 39-40°C, nausea, vomiting, cough with little sputum,

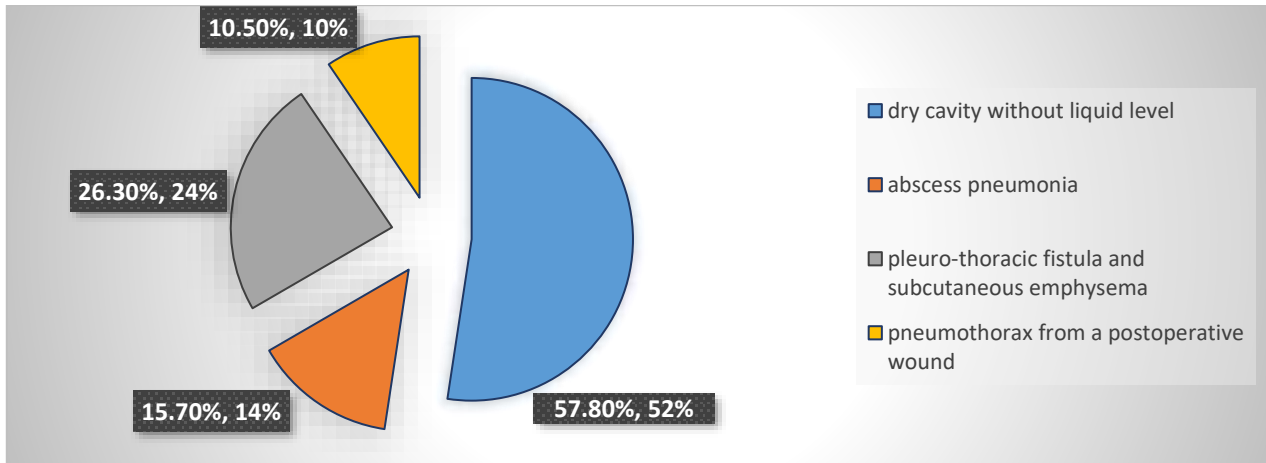
and difficulty breathing. All patients, along with general clinical methods of research, underwent multislice computed tomography (MSCT) of the chest, plain chest radiography and ultrasound of the pleural cavity. Patients at admission were consulted by a cardiologist, an endocrinologist, and empirical antibiotic therapy, strictly limited fluid therapy, and glycemic correction were started.

In patients with a lung abscess and in the presence of a horizontal fluid level, 5 patients (26.3%) underwent transthoracic drainage of the abscess after short-term preparation.



In the postoperative period, three daily sanitation (lavage) of the abscess cavity was performed with antiseptic and antibacterial agents (gatifloxacin, metronidazole) against the background of active aspiration of the pleural cavity. Patients who have a dry cavity without a liquid level 11 (57.8%) and 3 (15.7%) patients with abscess pneumonia did not undergo drainage, conservative treatment was

prescribed (Fig. 2). Against the background of COVID 19, with a lung abscess, a productive cough was not observed and the cough was dry without sputum. Due to the violation of the coagulation system in the background of antibiotic therapy, the patients were transferred to low molecular weight anticoagulant therapy.



Of the 5 (26.3%) patients who underwent transthoracic drainage, pleuro-thoracic fistula and subcutaneous emphysema were observed in the postoperative period. Currently, out of 5 (26.3%) patients, 2 (10.5%) outpatients have pneumothorax from the postoperative wound (pic.2). Taking into account the peculiarities of the course of a post-covid abscess, and also bearing in mind that the abscess cavities are often dry, we decided to perform conservative treatment of these patients.

RESULTS.

Timely individual treatment, including empirical antibacterial and adequate anticoagulant therapy, taking into account the control of all parameters of the coagulogram, showed a good result in the next 4-5 days. On the 3rd day, positive changes were observed in the dynamics in clinical and laboratory studies. In patients who underwent drainage, there was a decrease in the size of the abscess by 1.5 - 2.0 cm and abscessing pneumonia. With abscesses of small diameter and dry cavities, a positive result was obtained only with the help of conservative therapy. With a lung abscess, decompensation of respiratory functions against the background of diabetes mellitus complicates the choice of an individual treatment approach.

CONCLUSIONS.

Thus, the above data show that a correctly chosen individual strategy for managing patients with post-COVID pneumonia is the key to favorable results. As a result of lung fibrosis in the postoperative period, dry

cavities with small diameters are visualized. In such cases, it is strongly recommended to treat them conservatively. These studies are still ongoing and require further study and collection of materials.

REFERENCE.

1. Beloborodov V.B. Necrotizing pneumonia: pathogenesis, clinical presentation and treatment. Practical pulmonology, 2017. no. 4. pp 22-29. (In Russ)
2. Gudima G.O., Khaitov R.M., Kudlay D.A., Khaitov M.R. Molecular immunological aspects of diagnosis, prevention and treatment of coronavirus infection. Immunologiya, 2021, vol. 42, no. 3, pp. 198-210. (In Russ.) doi: <https://doi.org/10.33029/0206-4952-2021-42-3-198-210>.
3. Chuchalin A.G. Slowly-resolving pneumonia. Pulmonologiya, 2014, no. 3, pp. 5-14. (In Russ)
4. Chuchalin A.G., Sinopalnikov A.I., Kozlov R.S., Avdeev S.N., Tyuriv I.E., Rudnov V.A., Rachina S.A., Fesenko O.V. Clinical guidelines on diagnosis, treatment and prophylaxis of severe community-acquired pneumonia in adults. Clinical Microbiology and Antimicrobial Chemotherapy, 2015, vol. 17, no. 2, pp. 84-126. (In Russ)
5. Beauco te V., Plantef ve G., Tirolien J.A., Desaint P., Fraiss  M., Contou D. Lung abscess in critically ill coronavirus disease 2019 patients with ventilator-associated pneumonia:



- a French monocenter retrospective study. *Crit. Care Explor.*, 2021, vol. 3, no. 7, p. e0482.
6. Blaize M., Mayaux J., Nabet C., Lampros A., Marcelin A.G., Thellier M., Piarroux R., Demoule A., Fekkar A. Fatal invasive aspergillosis and coronavirus disease in an immunocompetent patient. *Emerg. Infect. Dis.*, 2020, vol. 26, no. 7, pp. 1636-1637.
 7. Blonz G., Kouatchet A., Chudeau N., Pontis E., Lorber J., Lemeur A., Planche L., Lascarrou J.B., Colin G. Epidemiology and microbiology of ventilator-associated pneumonia in COVID-19 patients: a multicenter retrospective study in 188 patients in an un-inundated French region. *Critical Care*, 2021, vol. 25, no.1, pp. 1-12.
 7. Cohn L.A. Glucocorticosteroids as immunosuppressive agents. *Semin. Vet. Med. Surg. Small Anim.*, 1997, vol. 12, no. 3, pp. 150-156.
 8. Coutinho A.E., Chapman K.E. The anti-inflammatory and immunosuppressive effects of glucocorticoids, recent developments and mechanistic insights. *Mol. Cell Endocrinol.*, 2011, vol. 335, no.1, pp. 2-13.
 9. Dalponte R. D. S., Heluany G. C. V., Michels M., Madeira K., Prado C. D. E. Surgical treatment of necrotizing pneumonia in children: a 10-year assessment. *Revista do Colégio Brasileiro de Cirurgiões*, 2020, vol. 47, p. e20202374.
 10. Duployez C., Le Guern R., Tinez C., Lejeune A.L., Robriquet L., Six S., Loiez C., Wallet F. Panton-Valentine leukocidin-secreting staphylococcus aureus pneumonia complicating COVID-19. *Emerg. Infect. Dis.*, 2020, vol. 26, no. 8, pp. 1939-1941.
 11. Goursaud S., Mombrun M., du Cheyron D. COVID-19 necrotising pneumonia and extracorporeal membrane oxygenation: a challenge for anticoagulation. *ERJ Open Res.*, 2020, vol. 6, no. 2, pp. 00182-2020.
 12. Maiese A., Manetti A.C., La Russa R., Di Paolo M., Turillazzi E., Frati P., Fineschi V. Autopsy findings in COVID-19-related deaths: a literature review. *Forensic Sci. Med. Pathol.*, 2021, vol. 17, no. 2, pp. 279-296.
 13. Nizami M., Grieco C., Hogan J., Aresu G. Surgical management of a COVID-19-associated necrotic pneumonia. *BMJ Case Reports CP*, 2021, vol. 14, no. 6, p. e240766.
 14. Renaud-Picard B., Gallais F., Riou M., Zouzou A., Porzio M., Kessler R. Delayed pulmonary abscess following COVID-19 pneumonia: a case report. *Respir. Med. Res.* 2020, vol. 78, p. 100776.
 15. Sabbula B.R., Rammohan G., Akella, J. Lung abscess. *StatPearls [Internet]*. 2020. Retrieved October 02, 2021, from: <https://www.ncbi.nlm.nih.gov/books/NBK555920>.
 16. American Heart Association. HFSA/ACC/AHA statement addresses concerns re: using RAAS antagonists in COVID-19. [cited 20 March 2020]
 17. Petrillo MG, Bortner C, Cidlowski JA. Glucocorticoids: inflammation and immunity. *The Hypothalamic-Pituitary-Adrenal Axis in Health and Disease*.2017;43–63.
 18. YZhao Z, Zhang F, Xu M, et al. Description and clinical treatment of an early outbreak of severe acute respiratory syndrome (SARS) in Guangzhou, PR China. *J Med Microbiol.* 2003;52(Pt 8):715-720.