Treatment of Acute Lung Abscesses Considering their Non-Respiratory Function in Patients with Diabetes

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Abstract

During the examination and treatment of 465 patients with acute lung abscesses on the background of diabetes mellitus, a preoperative preparation program was developed that takes into account the phase of the process (group 1 - septic course of the process, group 2 - stabilization, group 3 - remission), the severity of endotoxemia and non-respiratory lung function. Patients of the 1st group against the background of basic long-term intra-arterial catheter therapy used the scheme of correction of non-respiratory function of the lungs that we developed, sanitized purulent foci with an electrolyzed solution of sodium hypochlorite. In 202 (79.9%) of 254 patients of the 1st group, it was effective that allowed to refuse the operation, while only 52 (40.6%) were not operated on in the 2nd, and 26 in the 3rd (31.3%) patients. In parallel, a pronounced normalizing effect was achieved in correcting the degree of violation of non-respiratory lung function against the background of delimitation and stabilization of the process. This allowed in 109 (60.9%) of 179 operated patients to confine themselves to lung resection with 8.7% of postoperative complications in the 1st group versus 18.4% in the 2nd and 24.6% in the 3rd, which emphasizes the effectiveness of our preoperative preparation.

Keywords: *Lung abscess, diabetes mellitus, non-respiratory lung function, diagnosis, conservative and surgical treatment.*

Introduction

Dissatisfaction of surgeons with the results of treatment of acute lung abscesses in patients with diabetes mellitus, due to the continued high mortality (up to 70%)[1] in gangrenous forms, contributes to the emergence of a large number of studies on various issues of the pathogenesis and treatment of this disease [12].

Against the background of the progress of resuscitation and intensive care in recent years in the treatment of acute lung abscesses in patients with diabetes mellitus[3], a combination of signs of disturbances in the activity of various organs and systems, defined by clinicians as multiple organ failure syndrome, began to be noted [9].

In our opinion, among the mechanisms of development of this syndrome[2], insufficient attention is paid to impaired non-respiratory function of the lungs, representing the main protective barrier that prevents the [18]generalization of infection and intoxication with subsequent disorders of almost all vital systems of the organism [17].

The treatment of acute lung abscesses in patients with diabetes mellitus is complex, is long and is accompanied by a large number of complications[19]. There is still no unity in the treatment of this disease. As a rule, they begin with intensive, complex therapy, including antibacterial drugs, non-specific anti-inflammatory drugs, detoxification therapy[13], sanitation of the tracheobronchial tree, and correction of metabolic disorders[7].

The indication for surgery is the absence of the effect of this treatment, carried out within 3 weeks, the chronization of the process that occurs[5], coming, according to various authors, in the period from 6 to 14 weeks from the time of the disease, the presence of life-threatening complications [6]. The weight of these criteria is estimated by various authors is far from unambiguous.

The foregoing determined the purpose and

objectives of this study: to clarify the indications for conservative, preoperative treatment of patients with acute lung abscess with diabetes mellitus, considering violations in non-respiratory lung function to improve immediate and long-term results of surgical treatment.

Material and Research Method

465 patients with acute lung abscesses were observed against diabetes mellitus at the age from 28 to 60 years old, divided into clinical groups[10]. The 1st group consisted of 254 (54.6%) patients with a pronounced clinical picture of inflammatory destructive process in the lung, which against in the background of prolonged selective intra-arterial catheter therapy, carried out targeted correction of non-respiratory lung function according to the method developed by us[12]. The 2nd group consisted of 128 (27.5%) patients with a stable course of the disease who used long-term intra-arterial catheter therapy according to the traditional scheme with generally accepted correction of metabolic disorders [14].

The 3rd group consisted of 83 (17.9%) patients who received purely traditional conservative treatment in other hospitals and transferred to our clinic to continue treatment with remission of the inflammatory process. This division of patients with acute lung abscesses in the presence of diabetes reflects different stages in the development and implementation of method for diagnosing and treating these diseases in our clinic.

The Results Obtained and their Discussion

The majority of patients - 341 (73.3%) were admitted within 2.5 months from the moment of illness, 119 (25.6%) patients were ill for no more than 3 months and only 5 (1.1%) were longer. We have developed a quantitative method for assessing the degree of impairment of non-respiratory lung function (compensated, sub compensated and decompensated) in patients with chronic non-specific inflammatory lung diseases on the basis of integral blood levels of albumin, globulins, total phospholipids and lipids, phosphatidylcholine and sphingomyelin.We used this method, with small additions and changes reflecting the degree of the inflammatory, mainly bacterial, process in the broncho pulmonary system, in the treatment of patients with acute lung abscesses with diabetes mellitus. A comprehensive clinical and biochemical study in patients with acute lung abscesses in diabetes mellitus during the stages both conservative and surgical treatment, led to the conclusion that they have a varying degree of non respiratory lung function impairment, deepening in the early postoperative period due to the presence of a lung abscess in the parenchymaa factor in surgery and general anesthesia.

The main rule in the treatment of patients with acute lung abscesses in the presence of diabetes mellitus was early and adequate endobronchial or transthoracic drainage and sanitation of the purulent-necrotic lesion in the lung. In 54.3% of cases, these rehabilitation method were used simultaneously.

Patients of the 1st clinical group, taking into account the degree of impairment of non-respiratory function of the lungs, used intravenous infusion of fat emulsion preparations (nirpid) and protein-synthetic enhancing agents by daily intraarterial drip of 100ml of a 10% solution of albumin or alvezin with intramuscular injection against the background of basic therapy. retabolil. Conservatively treated with the achievement of a certain positive result were 286 (61.5%) patients with acute lung abscesses associated with diabetes mellitus, 179 (38.5%) patients were operated on. In the first clinical group of 208 people, complete recovery was achieved in 163 (78.4%), and clinical remission was achieved in 39 (18.7%) patients with acute lung abscesses with diabetes mellitus. Disease progression was observed in 6 (2.9%) patients. In the 3rd clinical group, complete cure without surgery was achieved only in 4 (15.4%) of 26 patients, and clinical remission in 8 (30.8%) patients. It should be noted that a positive effect was achieved to a greater extent in the most severe patients.

So, in the 1st group, 202 (97.1%) patients achieved cure and persistent clinical remission. Only 6 (2.9%) patients who were admitted to the hospital with a running process, expressed symptoms of endotoxemia and respiratory failure were found to be ineffective; their disease progressed and they died of septic shock.

In the 2nd clinical group, the results of conservative treatment were more modest: only 16 (30.8%) patients achieved complete cure. Clinical improvement was noted in 20 (38.5%), treatment had no effect in 14 (26.9%) and the progression of the process, resulting in death, in 2 (3.8%) patients.

In the 3rd clinical group, complete cure and clinical remission were achieved in 12 (46.1%) treated, 14 patients (53.8%) were found to be ineffective. In general, conservative treatment was effective in 250 (87.4%) patients. Of these, 183 (64%) achieved a

complete cure, 67 (23.4%) patients refused surgery to achieve clinical remission. In 28 (2.8%) patients, the effect of treatment was not observed, and in 8 (2.8%) the pathological process progressed, therapeutic measures were ineffective, and patients died from various causes.

179 (38.5%) patients with acute lung abscesses were operated on the background of diabetes mellitus. Of these, 46 (18.1%) of the 1st clinical group, 76 (59.4%) of the 2nd and 57 (68.7%) of the 3rd. The main operation was a lobectomy performed in 109 (60.9%) patients. Advanced operations (pulmonectomy, bilobectomy, lobectomy with resection of segments) were performed in 70 patients[18]. The prevalence in the structure of organ-preserving interventions, we explain the preoperative use of long-term intra-arterial catheter therapy, which ensures the delimitation and stabilization of the destructive process in the lung[11].

It should be noted that the performed interventions were rather complicated and traumatic, which caused a number of complications after operations in 32 patients. The main group of complications is associated with impaired bronchial obstruction resulting in atelectasis and pneumonia in the remaining part of the lung (13 and 5, respectively).Empyema on the background of fistula of the bronchus stump occurred in 2 patients. The residual cavity in the early postoperative period, as a result of incomplete expansion of the remaining part of the lung, appeared in 4 (2.23%) patients. Postoperative bleeding was noted in 1 (0.56%) patient. Pulmonary embolism was the cause of death in 3 (1.7%) operated patients. Least of all were complications from the postoperative wound that occurred in 2 (1.12%) patients. Fixing the number and type of postoperative complications, it should be noted that in the 3rd clinical group they were noted in 14 (24.6%) patients, in the 2nd - in 14 (18.4%) patients and in the 1st clinical group - in 4 (8.7%) examined. Analyzing and explaining the results of conservative and surgical treatment of patients with acute lung abscesses against diabetes mellitus, we studied the dynamics of the clinical manifestations of the inflammatory process at the main stages of treatment. 46 (25.7%) of the 179 patients operated on in the clinic received a pronounced clinical presentation of the inflammatory process in the lung, which required intensive preoperative treatment, taking into account the degree of impairment of non-respiratory lung function.

Using method of conservative correction, it was possible to stabilize the process and achieve remission before surgery in 171 (95.5%) patients. Of these, the process was stabilized in 42 (23.46%) patients of the 1st group, remission was observed in 3 (1.68%) of the 1st and 14 (7.82%) patients of the 2nd clinical group, there was no effect from preoperative treatment only in 1 patient of the 1st group, and in 7 patients with a stable course of the disease deterioration occurred. These patients were operated on for vital indications.

Thus, by the time of the operation, the number of patients with acute lung abscesses in the presence of diabetes mellitus with symptoms of severe inflammatory process, decreased under the influence of conservative treatment to 4.47%, with stabilization of the process increased to 54.19%, and remission was achieved in 41.3% the patient, which confirms the effectiveness of the proposed conservative measures, but it is not clear why the results of preoperative treatment in patients with acute lung abscesses of the 2nd and 3rd clinical groups are worse than in patients with more pronounced clinic of the disease..

As indicated above, patients with acute lung abscesses in the presence of diabetes mellitus have a certain degree of impairment of non-respiratory lung function, manifested in various combinations of disorders of both systemic homeostatic[6] and local protective reactions. Considering the fact that the compensated and balanced degree of impairment of non-respiratory lung function is usually a dynamic and reversible process [19], and impairment of non-respiratory function of the lungs of patients with acute lung abscesses during diabetes mellitus can vary, we analyzed the degree of impairment of non-respiratory lung function within the clinical groups [15].It was found that 179 (38.5%) patients of the 1st clinical group had severe and moderate impairment of non-respiratory lung function characteristic of compensated changes, and 75 (16.1%) revealed subcompensated disorders.

Decompensated disturbances of non-respiratory lung function in patients of the 1st clinical group were not recorded. In 98 (21.1%) patients of the 2nd clinical group, compensated violations of the non-respiratory function of the lungs were revealed, disorders of the type of subcompensated recorded in 18 (3.9%) of the examined and less often decompensated were observed in 12 (2.58) %) surveyed.

For patients with acute lung abscesses in the presence of diabetes mellitus in the 3rd clinical group,

a decompensated form was found in 56 (12%) and subcompensated in 27 (5.8%) of them.

The data presented indicate that the stabilization and remission of the process in patients with an acute lung abscesses during diabetes mellitus, which are clinically determined, in most cases is not accompanied by normalization of non-respiratory lung function[1], which requires adequate[10] treatment of patients with acute lung abscesses, considering their degree of disturbances non-respiratory function, which meets the requirements of rehabilitation[14], which provides an increase in the proportion of patients specific weight with clinical recovery and remissions, and for staged surgical treatment reduces the number of inflammatory postoperative complications, improves immediate and long-term outcomes.

Conclusions

1. Conservative treatment was effective in 250 (53.76%) patients with acute lung abscesses in the presence of diabetes mellitus. Of these, 183 (64%) patients achieved complete recovery.
2. The proposed conservative, corrective preoperative treatment made it possible to stabilize the process and achieve remission before surgery in 171 (95.6%) operated patients with acute lung abscesses with diabetes mellitus;
3. Effective preoperative preparation, carried out considering the degree of violation of non-respiratory function of the lungs, limits and stabilizes the inflammatory process, which allowed 109 (60.9%) patients with acute lung abscesses to limit themselves to economical lung resection with 17.9% of complications in the postoperative period.
4. Clinical stabilization and remission of the process, is not always accompanied by normalization of the non-respiratory function of the lungs, which requires rehabilitation of patients taking into account their degree of violation of this activity.

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References

1. D.B BARBAOOISS. Optimization of method for the diagnosis and treatment of acute abscesses and gangrene of the lungs in patients with diabetes. 2012; 2(3): p. 38-51.
2. O.T.Sattarov EKAAOO. Non-respiratory Function of the Lungs during Their Purulent-Inflammatory Diseases.. Doctor post-graduate student. 2011; 44: p. 205-210.
3. The Intensity of Lipid Peroxidation In The Lungs During Experimental Pneumosclerosis. I.A. Ziyakulov, A.O. Okhunov, O.T. Sattarov, A.S Komarin. 2011; 47(2): p. 330-335.
4. Sh.U. Babayarova AOOISS. Activity of the no-system of the lungs at various volumes of their resection. 2009; 33(6): p. 454-457.
5. Selective endovascular method of treatment of limited and common forms of acute purulent-destructive pulmonary diseases. A.O.Okhunov, Sh.A. Hamdamov, U.I Pulatov. Innovative technologies in medicine. 2018;: p. 117.
6. Authors. A.O. Okhunov SRRDAO. Actual questions of optimization of treatment method patients with acute lung abscesses. Materials of the international scientific and practical conference: «International scientific review of the problems and prospects of modern science and education» Number Boston. 2018;: p. 22-23.
7. Clinical case of acute purulent-destructive pulmonary disease, complicated by necrotic factiety against diabetes mellitus. Authors. Alisher Oripovich Okhunov. Date of publication 2018/10/31. Materials of the conference The first International Conference o. .
8. A.O. Okhunov UIPDAOStae. Morphological changes in the lungs with the development of sepsis against the background of purulent-inflammatory diseases of the soft tissues.; 48: p. 60-68.
9. Metabolic activity of lungs in the development of an experimental model of surgical sepsis/Authors: Azizov Yorkin Husanovich, Okhunov Alisher Oripovich, Azizova Pokiza Husanovna. Date of publication.. Journal European science review. Number 11-12. Publisher «East West» Association for Advanced Studies and Higher Education GmbH. 2018.
10. Improvement of method of treatment of acute lung abscess taking into account the activity of non-respirator activity. A.O. Okhunov SAKDoP2MotCTaPoRaG. 2018; 7(48): p. 60-68.
11. Purulent destructive diseases of the lungs

pampattAAOOSAKDAODOP2JPomsae.; 9(129): p. 35-43.

12. Clinical-morphologic characteristic of the new modelling of acute purulent destructive lung diseases. Oxunov SAKDopP2MJoeas.; 9(9): p. 89-93.
13. A.O Akhunov NOAUIPDAOJoeast. Characteristics of metabolic activity in the lungs in dynamic experimental model of surgical sepsis.; 8(31): p. 45-54.
14. Differentiated approach to the treatment of lung abscesses. An innovative step to solving the problem. Authors A.O. Okhunov, Sh.A. Khamdamov D.A. Okhunova date of Publication 2018. Pages 104 Publisher LAMBERT Academic Publishing RU Publication 2018 tsy 104 Industry. 2018.
15. Endovascular method of the treatment of acute purulent destructive lung diseases Authors A.O. Okhunov Date of publication 2018 Materials of the conference. Innovations in medicine Page 134.
16. Peculiarities of the course of acute purulent destructive lung diseases on the background of diabetes. Authors A.O Okhunov, I.S.Sattarov/Date of publication 2015 Journal of Tashkent Medical Academy Pages. .
17. Pathogenesis of Complications in the lung abscess. Authors S.J. Bozaripov, A.O. Okhunov. Date of publication 2014 Medical journal of Uzbekista. 2014; 5: p. 100-103.
18. Analysis of unsatisfactory treatment results for purulent-destructive pulmonary diseases associated with diabetes mellitus. Author's A.O. Okhunov Date of the publication 2014 Medical journal of Uzbekistan.; 7(11).
19. Morphological characteristics of lungs in the dynamics of development of a new experimental model of surgical sepsis. Y. Azizov, A Okhunov Date of publication 2012 Journal European Medical Health and pharmaceutical journal (MHP) Number 3 Pages 34-36. 2012;: p. 34-36.