

OPTIMIZATION OF DIAGNOSTIC AND TREATMENT METHODS ACUTE ABSCESSSES AND GANGRENG OF LUNGS IN PATIENTS WITH DIABETES

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Abstract

Effective treatment for acute suppurative destructive lung diseases and diabetes mellitus is a topical application of antibacterial drugs in large doses by prolonged selective intra-arterial catheter therapy. When pleural complications should expand the indices for drainage.

INTRODUCTION

Among patients with acute purulent-destructive pulmonary diseases (APDPD), patients with abscesses and pulmonary gangrene [1,4,6,13] are the most severe in flow and prognosis. At the same time, the aggravating factor in the course of these diseases is the aggravated morbid background, in particular diabetes mellitus.

Despite the successes in the technique of surgical operations, the use of antibacterial and antiseptic agents of new generations, the mortality of this category of patients remains high. So, according to various clinics in patients with APDPD, it ranges from 10 to 35% [3,4,6,7], and in the presence of diabetes mellitus, it varies from 30-90% [1,2,9,10,12]. An important role in high mortality is played by progressive endotoxemia, which causes the development of multi-organ and polysystemic insufficiency [5,10]. At the same time, the traditional conservative treatment of APDPD is considered ineffective and often ends in death.

According to our clinic for 2017-2021, conservative treatment was successful in only 64.4% of patients, of which 4.5% achieved full recovery, and 27.4% achieved clinical recovery. In 43.6% of cases, the purulent-inflammatory process in the lungs, against the background of diabetes mellitus, turned into a chronic form, and lethality reached up to 24.5%. At the same time, mortality after resection operations reached 34.5%.

MATERIAL AND METHODS

From 2017 to 2021, the multidisciplinary TMA clinic, the department of purulent surgery and surgical complications of diabetes mellitus, treated 265 patients with acute abscesses and gangrene of the lungs against the background of diabetes mellitus, in which we applied various treatments depending on the age, severity of the patient's condition, course and localiza-

tion of the suppressive process in the lungs.

In 89 (33.6%), the disease against diabetes mellitus was complicated by empirical pleura or pyopneumothorax. Gangrenous abscesses and lung gangrene were present in 84 (31.7%) patients: common gangrene - in 9, limited gangrene (gangrenous abscess) - in 75. The total mortality in the group of patients with APDPD was 8.3% (22 patients died). Among the dead, 14 had the empyema pleura and pyopneumothorax and 8 had gangrene and gangrenous abscesses (1 of them after lung resection for pulmonary bleeding). All deceased patients entered the clinic with severe purulent intoxication and respiratory insufficiency, the severity of the condition was so pronounced that most of them died on 1-3 days after admission to the hospital. Patients who died were more likely to have comorbidities and complications such as an extensive bilateral process in the lungs (6), pulmonary bleeding (3), extensive chest phlegmon and severe sepsis (3), less often - pulmonary heart, extensive bedsores, myocardial infarction. All were manifestations of pathological changes in the lungs due to the development of diabetic angiopathy.

It should be noted that all patients before entering our clinic were treated in therapeutic clinics, where intensive antibacterial therapy was carried out for 1-3 weeks. Despite this, abscessity occurred, and patients often acted in an extremely serious condition, with pronounced purulent intoxication. They all needed more effective treatments.

Diagnosis of APDPD was based on data from clinical, laboratory and microbiological studies, on the results of a polyposition X-ray study, fibrobronchoscopy. To refine the phase of formation of destruction foci and identify pulmonary sequestrations, computed tomography and abscessography were used.

RESULTS

In crops, 27% of patients sown staphylococcus, in

20% streptococcus, in 19% - E. coli, in 18% - protea, in 7.2% blue bacilli in association or monoculture, in 2.1% - non-pathogenic bacteria and in 6.7% - bacterioids. Antibiotics have revealed low sensitivity of staphylococcus to penicillin and streptomycin, which are most often used to treat previous complications of pulmonary destruction. So, in 19 cases of 60 microflorae was sensitive to streptomycin, in 18 - to penicillin. The highest sensitivity was observed to cephalosporins of the IV generation - 44, aminoglycosides - 42, levomycetin, ampicillin and methicillin - 34, polymyxin - 7.

A mandatory component of treatment measures was the inclusion of methods of sugar-lowering drugs prescribed according to the recommendations of an endocrinologist.

The general direction of treatment of patients with APDPD against the background of diabetes mellitus was comprehensive intensive therapy with the use of minimally invasive technology. Operational interventions of a re-section nature were carried out according to strict indications.

When choosing the treatment method, we took into account the severity of the disease (Marchuk indices, Kitamura S.L. index, SAPS, Glazko scale), the nature of the pathological process and its localization (peripheral and central location of the decay site, the presence or absence of a breakthrough into the pleural cavity), the sensitivity of flora to antibiotics.

The main task in treating acute abscesses of lungs is to evacuate purulent contents from abscess cavity most quickly, which contributed to reduction of peripheral infiltration, restoration of full bronchial drainage and obliteration of cavity [4.14].

One of the treatments that made it possible to solve this problem was the transtoral drainage of the abscess cavity under videoscopic control. Such drainage makes it possible to quickly evacuate pus from the cavity, to carry out its constant reorganization through drainage, which leads to the elimination of an acute inflammatory process in the abscess cavity and surrounding pulmonary tissue. The main indications for the use of this method were large single abscesses located subcortical. Full recovery occurred in 35 (50.7%) of 69 patients. Clinical recovery with dry residual cavity outcome was observed in 23 (33.3%) patients. 7 (10.1%) patients underwent radical surgery.

The lack of effect of conservative therapy most often depended on inadequate endobronchial sanitization of the abscess cavity. In such cases, we used microtracheostomy with a catheter in the bronchus, draining an abscess under endovisual control, and

washing the abscess cavity with detergent solutions, in particular an aqueous solution of chlorhexedin (1:10,000). Microtracheostomy has been shown in well-drained pulmonary purulent cells of any localization. This method is used in 23 (8.6%) patients. In 13 (56.5%), full recovery occurred, 9 (39.1%) were discharged with dry residual cavities, 1 (4.3%) the patient was operated on due to pulmonary bleeding.

Most bronchopulmonary diseases are primary-segmental, so the pathological process in the pulmonary tissue is accompanied by various degrees of damage to draining bronchi [7.8]. In these cases, we consider segmental bronchial catheterization to be shown. It was produced in 33 (12.4%) patients. In all cases, segmental bronchial catheterization was combined with endobronchial sanitization. In this group of patients out of 33, 17 (51.5%) recovered, 11 (33.3%) left dry cavities, 2 (6.1%) died, 3 (9.1%) patients underwent radical surgery.

The intra-arterial method of administration of medicinal substances has a number of advantages over others, because it makes it possible to deliver the preparation to the affected organ in a short time and in greater concentration [4].

In order to achieve maximum concentration of administered drugs in inflammation focus 78 (29.4%) patients at admission to hospital were installed by angiographic method transfemoral access intraarterial catheter at the mouth of bronchial artery (in one-sided process) or aortic arc (in bilateral process) with prolonged intraarterial catheter therapy for 4-6 days. Treatment included intra-arterial bolus administration of antibacterial drugs in 2-3 combinations; correction of non-gas-exchange lung function disorders [11]: intraarterial administration of protein-synthetic enhancement agents (albumin, alvesin+retabolil) with simultaneous intravenous administration of esterified fat preparations, oral administration of polyene or polyene ext at 150 mg per day, refractory fats, 40% ethyl alcohol; stimulation of the body's immune forces was also carried out - the introduction of freshly citrate blood, antistaphylococcal plasma, antistaphylococcal gamma globulin, staphylococcal anatoxin, protease inhibitors (contrical, hordox); regional intraarterial anti-inflammatory therapy (prednisolone); correction of electrolyte exchange; detoxification; anticoagulant (fraciparin) and disaggregant (rheopoliglukin, trental, etc.) therapy.

Cephalosporins and aminoglycosides were prescribed intraarterially at maximum impact doses on the first day, respectively, since bacteriocidal action was achieved at an antibiotic concentration in the

blood 2-4 times higher than the average therapeutic [3]. To date, the unquestionable role of nonclostridial anaerobic microorganisms in the development of pulmonary destruction [1,2,4,6,12], therefore, metronidazole (metrogil, eflorane, clion) was used intraarterially to 3000 mg per day.

We used this method in patients:

- 1) with a progressive course of lung gangrene and pronounced purulent intoxication;
- 2) with common lung gangrene;
- 3) with central localization of the abscess.

Of 78 (29.4%) patients, 52 (67.6%) re-covered, 7 (9%) had dry cavities, 2 (2.6%) patients died from the progression of sepsis, 7 (9%) were operated on in remission.

Pulmonary destruction complicated by pyopnevmothorax or empirical pleura against the background of diabetes mellitus can occur in the pleural or pleuropulmonary type [4,9]. The pleural type is observed in subpleural abscesses that do not communicate with the bronchial tree. If such reports occurred, then after emptying into the pleural cavity, the abscess subsides and heals during treatment with the development of focal fibrosis, the further course of the disease is mainly determined by the empirical pleura [7]. Therefore, treatment should aim to eliminate the pleura empyema.

The pleuropulmonary type of complicated lung destruction has a more severe course, since the pyopnevmothorax or pleura empyema is supported by the main process, the treatment in this case is aimed at active rehabilitation of the tracheobronchial tree, the abscess cavity and the purulent process of the pleura [8].

Treatment of pleural complications of APDPD against the background of diabetes mellitus began with diagnostic pleural puncture, followed by the use of one of two methods of closed drainage. We agree with the authors that the indications for drainage should be extended from the points [2,4,12-14]. In this regard, we replaced the puncture treatment with microthoracocinthesis, which is performed by the Seldinger method after the primary puncture of the pleural cavity. The microdrainage of the pleural cavity was carried out by us with limited, non-strained pyopnevmothoraxes and pleura empyemes containing liquid pus without odor, with a tendency to clean and reduce the purulent cavity; small-sized bronchopleural fistulas were closed by fibrinous pleural overlays during treatment.

Indications for closed macrodrainage under videotoracoscopic control were strained pyopnevmothorax,

the presence of more than 200-300 ml of thick pus, severe intoxication, inefficiency of microthoracocinthesis for 2-3 days.

To sanitize the pleural cavity, an ozonated 0.9% sodium chloride solution (in the absence of bronchopleural fistula), an electrolyzed sodium hypochlorite solution at a concentration of 0.08-0.15 mg/l, 0.1% dioxidin with water-soluble ointments (levamicol, dioxicol) were used.

Of the 70 (26.4%) patients, only 11 (15.7%) managed to cure the empirical pleura with microthoracocinthesis. 59 (84.3%) patients underwent closed macrodrainage of the pleural cavity with a twofold silicone tube with an external diameter of 0.5-1.0 cm, of which 4 (6.8%) performed double closed drainage with constant drip irrigation of the pleural cavity with sodium hypochlorite solutions at a concentration of 0.08 mg/l through the upper tube with asphaltic. The two-light tube is convenient with limited pleura empyemes. Permanent irrigation of the pleural cavity with an ozonated 0.9% sodium chloride solution is possible only in the absence of bronchopleural fistula. Of the 59 (84.3%) patients who underwent closed drainage with active aspiration, clinical recovery was achieved in 52 (88.1%).

We believe that closed drainage with active aspiration, if it does not give a complete cure, then contributes to the limitation of empyema in its total form with the formation of pleural adhesions around it. This prevents the collaboration of the lung with open drainage of the empyema cavity. In 7 (11.9%) patients by closed drainage, they managed to achieve sanitation and a decrease in the empyema cavity, which was preoperative preparation for pleurectomy and decortification.

One of the complications of closed drainage is phlegmon of the soft tissues of the thoracic wall, 1 (1.7%) of the patient with such a complication underwent open drainage.

Given our experience, we completely abandoned crippling operations such as pneumotomy. The indications for pulmonary resection surgery in acute abscesses are massive bleeding that does not lend itself to conservative measures (including acute embolization of the bronchial artery on the side of the lesion and foam obturation of the regional bronchial segment), inefficiency of treatment for more than 2 months, i.e. practically in the chronic stage.

CONCLUSIONS

1. Treatment of APDPD against diabetes mellitus should be differentiated and complex;
2. Effective methods of treating APDPD against the

background of diabetes mellitus are topical use of antibacterial drugs in large doses through long-term selective intra-arterial catheter therapy;

3. In pleural complications of APDPD against the background of diabetes mellitus, indications for drainage should be expanded:

- microdraining of the pleural cavity effectively in case of limited, non-strained pyopnevmothoraxes and empires of the pleura containing liquid pus without odor, with a tendency to clean and reduce the purulent cavity;

- indications for closed macrodraining are strained pyopnevmotorax, the presence of more than 200-300 ml of thick pus, intoxication;

4. Pulmonary resection in acute abscesses cannot be considered justified and is permissible only with special indications (bleeding, inefficiency of all non-operative treatments over 2 months).

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