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PULMONARY ECHINOCOCCOSIS COMPLICATED BY RUPTURE INTO THE BRONCHUS (A CLINICAL CASE)

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Resume: Echinococcosis is a widespread severe human parasitic disease that is endemic to the republics of Central Asia and Kazakhstan, including Uzbekistan.

To date, many classifications of lung echinococcosis have been proposed, depending on the clinical course, localization and morphology.

Complicated echinococcosis characterizes the third period of the course of the disease, i.e. this includes suppuration of the cyst, breakthrough into the bronchus or pleural cavity, calcification.

Among the clinical manifestations, the characteristic symptoms are: pain of varying intensity on the side of the lesion, the release of fragments of chitinous membrane together with sputum, cough with mucopurulent sputum, hemoptysis and recurrent bleeding. Depending on the diameter of the bronchus draining the cyst and the virulence of the infection, the suppurative process in the cyst bed can take a gangrenous character, in these cases the sputum becomes putrefactive.

Echinococcus of the lung, which has broken into the bronchus, is characterized by symptoms pathognomonic for many diseases of the bronchopulmonary system, and the establishment of a correct diagnosis in the shortest possible time depends on a set of diagnostic research methods.

Keywords: Pulmonary echinococcosis, Hydatid cyst, Bronchial rupture, Complicated echinococcosis, Thoracic surgery, Echinococcectomy, Capitonnage, Pleural drainage, Preoperative preparation, Albendazole therapy

Introduction

Echinococcosis is a widespread parasitic disease of humans, endemic to the Central Asian republics, including Uzbekistan.

One of the severe complications of pulmonary echinococcosis is cyst perforation into the bronchus. According to various authors, its frequency reaches up to 50% of all complications and requires operations of different extent and nature.

Complicated echinococcosis characterizes the third period of disease progression. This includes

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cyst suppuration, rupture into the bronchus or pleural cavity, and calcification.

If we look at the frequency of detection of complicated disease progression in cases of lung involvement over time, the following picture emerges: according to N.I. Akhunbayeva (1971), complicated pulmonary echinococcosis occurs in 13.4% of cases; according to R.P. Askerkhanov (1978) – 30.7%; according to E.Kh. Urusov (1983) – 26.7%; according to Petrov D., et al. (2001) – 36.2%; Altiay G., et al. (2001) – 47%. As can be seen from these data, the proportion of complicated disease progression at the end of the 20th and beginning of the 21st centuries increased, indicating that incidence was also high.

At the turn of 2005–2010, due to the preventive use of antiparasitic drugs in children and adolescents, funded by the state and approved by regulatory documents of the Ministry of Health of the Republic of Uzbekistan, incidence began to decline, and at present, we encounter sporadic cases.

One of the severe complications of pulmonary echinococcosis is cyst perforation into the bronchus. According to various authors, its frequency reaches up to 50% of all complications and requires operations of different extent and nature.

Pulmonary echinococcosis ruptured into the bronchus is characterized by symptoms common to many diseases of the bronchopulmonary system, and establishing the correct diagnosis in the shortest possible time depends on a set of diagnostic methods.

The main method of treating this disease is surgical intervention, which can be organ-preserving (echinococcectomy according to Bobrov-Spasokukotsky, A.A. Vishnevsky, capitonnage according to Delbe, cyst extirpation, semi-closed echinococcectomy according to R.P. Askerkhanov, etc.) and resective (partial resections, lobectomies, bilobectomies, pneumonectomies).

It should be noted that different schools of thoracic surgery have different approaches regarding timing in complicated disease progression. For example, S.R. Rakhimov et al., 1998, and A.A. Gumerov et al., 2000, performed surgical interventions on an emergency and urgent basis after preliminary preoperative preparation. G.R. Askerkhanov et al., 2000, indicated emergency interventions in case of cyst rupture into the pleural cavity.

Other authors proposed a longer, comprehensive preoperative preparation (Azizov A.A., Davlyatov S.B., Safarov A.S., 1998).

Views of surgeons regarding resective surgical methods were rather controversial. Some authors (Aliyev M.A. et al., 2001; Toben F.M., Blaauwgeers J.L., 1995) considered resective methods indicated only in exceptional cases. Others believed that lung resections should be performed not only in complicated echinococcosis but also in all cases, regardless of the presence of complications from the cyst or lung parenchyma (Karapetyan E.K. et al., 2001; Rammos K.S. et

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al., 1996).

Considering the above, it can be noted that, despite extensive experience in treating pulmonary echinococcosis complicated by bronchial rupture, questions regarding surgical intervention tactics remain open. Questions about performing organ-preserving or resective interventions are debatable, and specific indications based on analysis of the clinical course and morphological studies are not clearly defined. Preoperative preparation and its indications are also of considerable importance.

Presented for your attention is a clinical case from the thoracic and cardiovascular surgery department of the Andijan Branch of the Republican Scientific Center for Emergency Medical Care (AF RNCEMP) of the Republic of Uzbekistan.

In its practice, the thoracic and cardiovascular surgery department of AF RNCEMP follows the Delafoy (1894) – Melnikov (1935) classification proposed by V.V. Vakhidov and E.S. Islambekov (1972) as the simplest and most schematic:
1st stage – asymptomatic course of the disease (latent period);
2nd stage – clinical manifestation of the disease (manifestation period);
3rd stage – complications (complementary period).

Complicated echinococcosis characterizes the third period of disease progression, i.e., this includes cyst suppuration, rupture into the bronchus or pleural cavity, and calcification.

Patient Kh., born in 1968, ID No. 16185/710, was admitted to the thoracic and cardiovascular surgery department on July 20, 2022, from the district medical center (RMO), where he had been treated in the intensive care unit with the diagnosis: Bilateral, giant, solitary pulmonary echinococcosis. Complication: cyst rupture into the bronchus of the right lung. Anaphylactic shock.

According to the RMO discharge summary and anamnesis, one hour before admission to the ICU, the patient, previously healthy, developed a persistent cough with copious sputum resembling vomiting, loss of consciousness, and subsequently received intensive therapy in the ICU. After stabilization, a chest MSCT revealed bilateral solitary pulmonary echinococcosis with rupture of the cyst of the right lung into the bronchus (Figs. 1 and 2).

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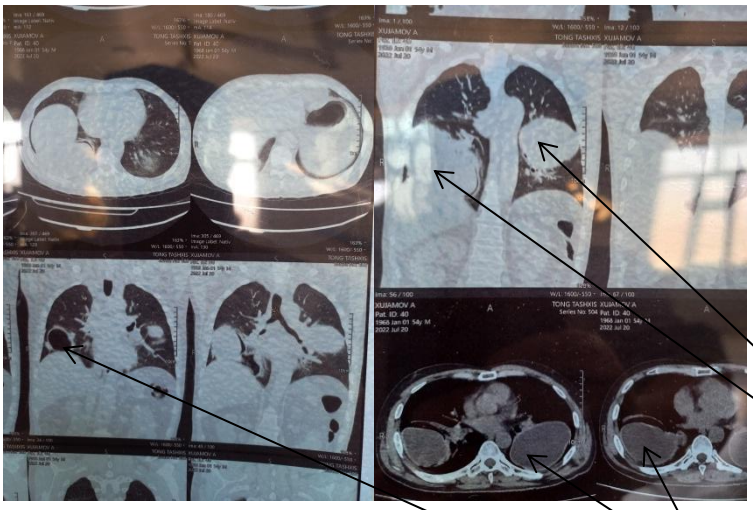

Figure 1. **Figure 2.**

On MSCT slices, on both sides there are large cavity formations containing fluid. The formation in the right lung has a gas layer (sign of complication).

After stabilization and further examination, the patient was transferred to AF RNCEMP, where, after brief preoperative preparation, under general endotracheal anesthesia, the following operation was performed: "Right lateral thoracotomy. Echinococcectomy from the lower lobe of the right lung with capitonnage of the residual cavity according to Delbet. Sanitation and drainage of the right pleural cavity."

Intraoperatively, it was revealed that the cyst was located in the lower lobe of the lung and the fibrous capsule of the cyst protruded from the lung tissue by one-third. Cyst puncture was performed, transparent fluid aspirated, the fibrous capsule incised, and the large white chitinous membrane removed. A bronchial fistula up to 6 mm in diameter was identified at the bottom of the residual cavity and was sutured with a "Z"-shaped stitch. The parasite bed was sequentially treated with 3% hydrogen peroxide solution, iodine-alcohol solution, and 96% alcohol. The parasite bed was obliterated according to Delbet, with additional pleuralizing sutures. The pleural cavity was treated with antiseptic solutions, double lower drainage was installed, and the wound was closed in layers tightly.

Simultaneous sequential echinococcectomy from the left lung was not performed due to labile hemodynamics and the anesthesiologists' recommendation.

The postoperative period was smooth, and on the 6th day after the intervention, the patient was discharged from the hospital in stable condition for further observation at home, with the condition to return for follow-up in a month.

At the follow-up visit, the patient's condition was satisfactory, hemodynamics stable, radiographically the right lung fields were expanded, sinuses free. The left lung formation was

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without complications.

Considering the above, under general endotracheal anesthesia, the following operation was performed: “Left lateral thoracotomy. Echinococcectomy from the lower lobe of the left lung with capitonnage of the residual cavity according to Delbet. Sanitation and drainage of the left pleural cavity.”

The operative tactics were practically identical to the first operation. It should be noted that two bronchial fistulas opening into the parasite bed with diameters up to 3 mm were present, which were sutured with a “Z”-shaped stitch.

The postoperative course was smooth, and the patient was discharged from the hospital on the 7th day after surgery in satisfactory condition for further observation at home and a recommended course of Albendazole chemotherapy.

Thus, despite the fact that the incidence of echinococcosis has significantly decreased over the past 20 years, the relevance of the disease, early detection, choice of diagnostic methods, and surgical treatment remains high and in demand. Further research aimed at improving prevention, diagnosis, and treatment methods for this disease should be conducted considering the development of pharmacy and medical technologies.

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