

Anterior bronchogenic mediastinal cyst, a case report at Danang C Hospital Vietnam

Vo Dac Truyen; Nguyen Van Song*

***Corresponding Author(s): Nguyen Van Song**

Department of Medical Laboratory, Danang University of Medical Technology and Pharmacy, Danang, Vietnam

Phone: +84 (0) 905290865; Email: ngvsong@yahoo.com

Abstract

In this report, we investigated a 24 year old patient with clinical symptoms such as coughing up blood, chest pain and fever. The patient was self-treated with antibiotics but was not effective. Our patient was febrile, tachycardic and tachypneic with a blood pressure of 120/80 mmHg. Medical laboratory test results showed as: blood formula, biochemistry, coagulation function, electrocardiography, echocardiography, abdominal ultrasound, respiratory function, bronchoscopy and other tests within normal limited values. X-ray examination of the lungs reveals tumors. Chest CT-scan showed the presence of follicular mass blockage in the anterior mediastinal walls with thick walls, optical increase, uniform margin and unknown surrounding boundaries. The patient was diagnosed with anterior mediastinal tumor. After removing the tumor, the patient was well progressing, the drainage tubes were removed after 48 hours and the dry incision was cut after only 10 days.

Keywords

anterior mediastinal tumor; bronchial mediastinal cysts; chest X-ray

Abbreviations

BMC: Bronchogenic mediastinal cyst; CT: Computed tomography; VATS: Video-assisted thoracoscopic surgery

Introduction

Bronchogenic mediastinal cysts (BMCs) are congenital lesions located usually in the middle or posterior areas of the mediastinum [1]. Cystic lesions of the lung have been reported since the 17th century, but the first report in the American academic medical data of a BMC was published in 1929 by Mixter and Clifford [2,3]. BMC account for around 50-60% of all mediastinal masses and they are seldom occurs in adults. The majority of bronchial cysts are found to be incidentally asymptomatic. Symptoms of mediastinal

bronchial cysts usually result from the compression of nearby structures or inflammation occurs in the follicles. A bronchial cyst inflammation can cause fatigue, chest pain or fever with or without increasing of leukocytes. Many patients may also cough up substances from the follicles. Clinical examination usually does not detect anything. Fever or tachycardia can manifest if the cyst is infected and sometimes posture wheezing can be heard [4,5]. The best methods to diagnose bronchial cysts is a chest CT scan. CT-scan is useful in determining the exact location of the tumor. Follicles are usually homogeneous and the density in the range is consistent with the fluid (from 0-20 Hounsfield units). The anatomical results show that the typical bronchial cyst is a smooth and round lesion. If there is no inflammation, it can be removed from the mediastinum position easily. Usually the substances inside the follicles is liquid and clear, but can also be yellow, white or viscous. Introduction of video-assisted thoracoscopic surgery (VATS) and da Vinci surgical system provide useful tools for surgeons to remove follicles easily [6,7]. However, if the follicles become symptomatic with inflammation the surgical procedures will be more difficult for both surgeons and patients. Therefore, unless there is an internal medical reason for not having surgery, most of these follicles should be removed. We report the complete resection by thoracoscopic surgery of soft-tissue bronchogenic cyst located in the anterior mediastinum.

Clinical Presentation

Medical laboratory and clinical characteristics

A 24 year old male was referred to our hospital with clinical symptom as follow: fever, coughing up blood, chest pain. Chest CT-scan showed the presence of follicular mass blockage in the anterior mediastinal walls with thick walls, optical increase, uniform margin and unknown surrounding boundaries (Figure 1A, 1B). The size of follicle is about 6.6×5.5 cm, the left size is about 3×5 cm, the fluid in the follicle has the density of 11-16 HU, no calcification and the wall of the follicle become thicker after the contrast injection (Figure 1C). Our patient was febrile (38°C), tachycardic (80 beats/min), and tachypneic (20 breaths/min) with a blood pressure of 120/80 mmHg. Medical laboratory test results showed as: blood formula, biochemistry, coagulation function, electrocardiography, echocardiography, abdominal ultrasound, respiratory function, bronchoscopy and other tests within normal limited values. Diagnosis before surgery: anterior mediastinal tumor.

Surgical report

We carried out to dissect the entire sternum of the middle chest line, the appearance image present was the adhesion between the entire tumor and the pericardium that could not distinguish the boundary. The entire follicle on the left side was attached to the pericardium and surrounding organs, the surface under the follicle was linked with the pericardium, and it was impossible to separate and we had to cut the follicle and leaving the boundary attached to the pericardium. The upside surface was removed from nameless vein carefully. On the right side, it was more easily to separate the follicle from the surrounding organs. However the entire of the right mediastinal pleura is clinging to the cyst, after the cyst was completely removed we could not see the right pleura.

In particular, the follicle has invaded through the middle lobe of the right lung with the size of the thumb. The part of the middle lobe was inflamed stiffly, the abscess of many mucus flows out. The inflamed lung in the middle lobe was removed with a GIA 75 mm machine (Grana, UK), the test was not deflated and no bleeding. The right pleural space was washed and vacuumed cleanly (Figure 2A, 2B). Microscopic image showed that bronchial follicles was respiratory epithelium and smooth glands (Figure 2C). Fluid was drained under the sternum. Closed drainage was carried out in the pleural space the both side through the fifth intercostal space pathway. The sternum was stitched with 5 points by steel threads. Clinical progress is very good after surgery, patient was struggling to breathe on his own, no bleeding, the drainage tube works well, the left drainage tube was removed after 24 hours, the right and under side of the sternum were removed after 48 hours. The incision is well dried and threads cutted after only 10 days.

Figures

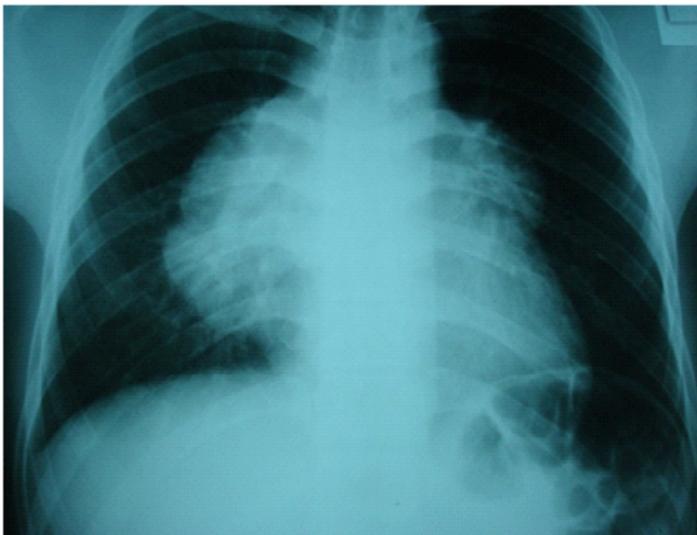


Figure 1A: Chest X-ray. The tumor is large, encroaching on right of the pleural cavity located on both sides of the middle line.



Figure 1B: Chest CT-Scan without contrast injection. The tumor is located in the anterior mediastinum, the fluid and the thick wall.



Figure 1C: Chest CT-Scan with contrast injection. Dumbbell shaped tumor in the anterior mediastinum.



Figure 2A: All tumors are removed.



Figure 2B: The tumor has a thick wall, the inner surface has soft tissue thick inflamed cyst

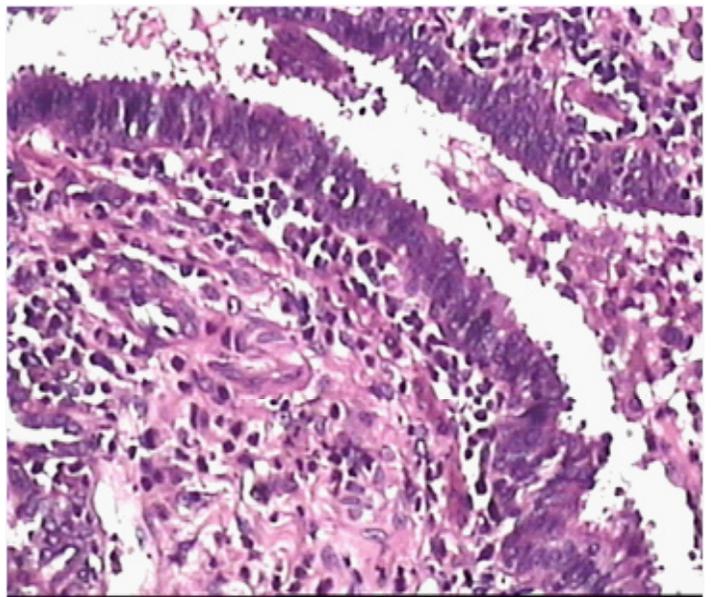


Figure 2C: Image of microscopic bronchial follicles showing respiratory epithelium, smooth glands and muscles.

Discussion

Bronchial follicles are the most common mediastinic follicles. Bronchial follicles are derived from abnormalities tissue during the development of the lungs so that the follicles can be located anywhere of the lungs. When bronchial cysts develop in the mediastinum, the most common location is the area under the trachea. However, bronchial cysts can occur anywhere in the body and have been reported to be associated with esophagus, pericardium or sternum. The bronchial capsule may have a shape of dumbbell and on both side of the diaphragm [2,8]. In our report, bronchial cysts are located in the anterior mediastinum, this is a rare location.

The bronchogenic cyst is a rare congenital malformation. It results from an abnormal budding of the tracheobronchial tree when segregating from the primitive intestine, around the seventh week of gestation [7,9]. Bronchial cysts are rarely found in patients over 50 years old. However, In 2012, there were three cases of anterior mediastinal bronchogenic cysts have been reported in Korea. In which two patients are female with the age of 46 and 65 year old respectively and a 43-year-old male patient [10]. As we mentioned above, bronchogenic cysts are typically located in the middle mediastinum, especially in the subcarinal area, and it is not rare to find them in the posterior mediastinum. However, there is a few of cases of have been reported till now.

About clinical symptoms, many authors have reported that bronchial cysts often have no symptoms. Fontenelle et. al demonstrated that it was 78% of bronchial cysts were found by chance in young military patients screened with chest X-rays [11]. Another report showed that there is only 7 out of 26 patients with a rate of nearly 30% had no symptoms [12]. The symptoms of a mediastinal bronchial follicles were usually the result of compression of nearby structures or inflammation in the follicles. The symptoms of a mediastinal bronchial capsule are usually the result of compression of nearby structures or infection in the follicles [8,13].

Our patients were hospitalized with coughing, fever, hemoptysis, chest pain. Surgery was a selected methods and we found that the follicles stuck to the pericardium, punctured the right middle lobe so that the follicles were inflamed and invated with bronchial trees. We were open the midline sternum because the capsule is located on both sides of the middle line. Our treatments are consistent with the academic medical data and other authors.

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Authors Information: Vo Dac Truyen¹; Nguyen Van Song^{2*}

¹Department of Surgery, Danang C Hospital, Danang, Vietnam

²Department of Medical Laboratory, Danang University of Medical Technology and Pharmacy, Danang, Vietnam

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