

## CASE STUDY

# A HUGE PERICARDIAL CYST MIMICKING A FALSE LEFT DIAPHRAGMATIC PARALYSIS

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Pericardial cysts are infrequent mediastinal entities. They can mimic cardiac chamber enlargement, phrenic hernia, malignancy, bronchogenic cysts, pleurisy, dextrocardia. Diaphragmatic elevation can also be misdiagnosed in some cases.

The reports about huge pericardial cyst mimicking the left diaphragmatic elevation (paralysis) are not common. The correct diagnosis of pericardial cyst can be difficult due to unremarkable complains and non-specific findings on chest radiography. In this report we have presented a rare clinical case described as the huge pericardial cyst mimicking a false left diaphragmatic paralysis. The combination of different radiological technics (CT-scans, barium esophago-gastrography etc.) are useful to correct preoperative diagnosis. Transthoracic (intercostal) accesses are the dominant to operate on patients with huge pericardial cysts.

**KEY WORDS:** Pericardial cyst, Chest X-ray, diaphragmatic paralysis, thoracotomy, thoracoscopy, computed tomography

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**INTRODUCTION**

Pericardial cysts are infrequent mediastinal entities. They make up about 6% of mediastinal formations [1]. Two thirds of them are found on the right side, they occur in most cases in the third or fourth decade of life [2,3]. Pericardial cysts can have either congenital or acquired (inflammatory, hydatid, tumor) origin. [1,2,4]. Their appearance is connected with incomplete coalescence of fetal lacunae of the pericardial formation. Pericardial cyst can mimic cardiac chamber enlargement, phrenic hernia, malignancy, bronchogenic cysts, pleurisy and even dextrocardia [5]. Diaphragmatic elevation can also be misdiagnosed in some cases. The reports about huge pericardial cyst mimicking the left diaphragmatic elevation (paralysis) are not common. Our observation arises interest due to rarity and some difficulties in differential diagnose.

**CASE REPORT**

A 63-year-old woman complaining about dyspnea, pain on the left rib cage and general weakness was admitted to the hospital.

Chest radiography revealed the signs of the left diaphragmatic paralysis to the fourth rib level, compressive atelectasis of the lower lung lobe and mediastinal shifting to the left.

Preliminary diagnose "Left diaphragmatic paralysis" was made.

Next diagnostic step included esophago-gastrography with barium sulfates swallowing. The normal physiological position of abdominal organs was indicated.

Chest computer tomography (CT) was performed. The round homogeneous mass 17\*10 cm with density of 6 Hounsfield units was revealed above the left diaphragmatic cupola (Fig. 1).

Laboratory tests had no pathological changes.

According to echocardiogram data, there was no fluid in pericardial cavity, but there was a lot of fluid in pleural space on the left side.

The patient was operated on thought open thoracotomy. There was the round tension thin-wall sac filled with clear exudate in pleural cavity. It looked like giant cyst, which occupied a bigger part of the left hemithorax with lung and heart compression (Fig. 2).

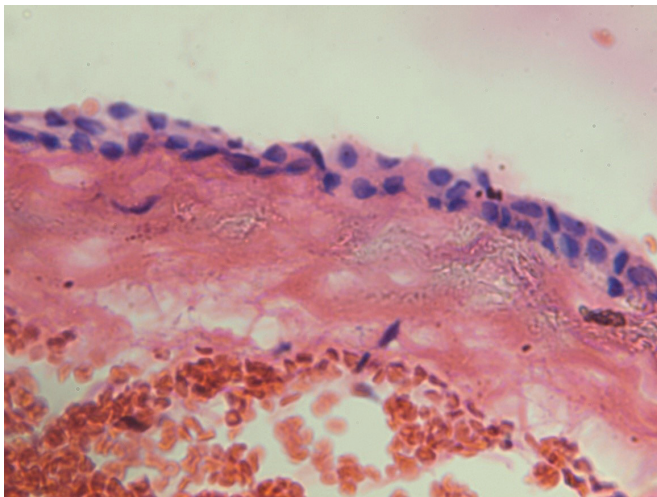
The cyst was attached to the pericardium in front of the phrenic nerve by planar adhesions. Two liters of yellow foamy fluid were removed. Resection of it was performed by a high-frequency live tissue electric welding device "Patonmed" [6]. Histological examination of the cyst wall revealed fibroelastic base covered with mesothelium cells and extensive hemorrhage (Fig. 3).

In the postoperative period, the patient's condition improved, the left lung expanded, the mediastinal organs occupied the middle position, and the normal diaphragmatic level was clearly visible on the control chest radiograph. On the 7th postoperative day the patient was discharged.

The correct diagnosis of pericardial cyst can be difficult due to unremarkable complains and non-specific findings on chest radiography incidentally. Among the possible life-threatening complications some authors indicate con-



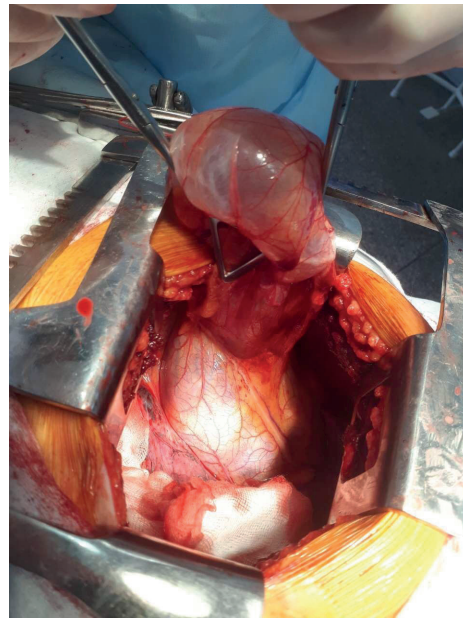
**Fig. 1.** A non-contrast computed tomographic scan of the patient chest. It shows the reducing of lower lobe of the left lung in size, above the left diaphragm cupola there is a homogeneous dome-shaped mass resembling relaxation



**Fig. 2.** Photomicrograph of a cyst section that is presented with fibroelastic base covered with mesothelium cells and extensive hemorrhage (H&E, orig.  $\times 100$ )

strictive pericarditis, cardiac tamponade, sudden death, cyst rupture, obstruction of intracardiac outflow, pulmonary stenosis, erosion into the vena cava and ventricular wall, mitral valve prolapsed, heart failure, atrial fibrillation, pericarditis, bronchial obstruction [1, 3]. Additional diagnostic methods for pericardial cysts include transthoracic echocardiography, computed tomography, magnetic resonance imaging of the chest and transoesophageal echocardiogram [3].

Sometimes the diagnose can be stated only during surgery. For example, Satur et al. (1996) described diagnostic hesitations between elevated right hemidiaphragm and subpulmonary effusion, but the latter was "confirmed" by ultrasound data of fluid. But thoracoscopy showed a giant right-side pericardial cyst contained 2.5 l of exudate [7].



**Fig. 3.** Pericardial cyst attaches to the the pericardium in front of the phrenic nerve

Treatment of patients with big cysts includes surgical resection or percutaneous aspiration and alcohol sclerosing injections [5, 8]. Video-assistant thoracoscopy and thoracotomy remain as the most common accesses to operate on the giant pericardial cysts, but there is mentioned sternotomy too [9]. Conservative treatment is described as an exception [3].

In this report we have presented a rare clinical case described the huge pericardial cyst mimicking a false left diaphragmatic paralysis using esophago-gastrography and found the normal localization of abdominal organs.

## CONCLUSIONS

1. The reported case illustrates the necessity in the difference diagnosis of huge pericardial cyst and left diaphragmatic paralysis.
2. Combination of different radiological technics (CT-scans, barium esophago-gastrography etc.) are useful to correct preoperative diagnosis.
3. Transthoracic (intercostal) accesses are the dominant to operate on patients with huge pericardial cysts.

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*The patient gave written permission to publish his case. Availability of data and materials: The chest CT datasets used in this case are available from the corresponding author on reasonable request.*

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#### **Conflict of interest**

*The Authors declare no conflict of interest.*

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**A** - Work concept and design, **B** - Data collection and analysis, **C** - Responsibility for statistical analysis,

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