

Video-assisted approach to thoracic cysts (pericardial cyst)

Abordaje videoasistido para quistes torácicos (quiste pericárdico)

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ABSTRACT

Pericardial cysts are rare, benign, and asymptomatic mediastinal masses. Most are found in the right cardiophrenic angle, they occur due to embryonic malformations and are found incidentally during complementary studies. Management may be conservative or surgical and is individualized according to the clinical presentation. We describe the case of a patient with a pericardial cyst in an unusual location, left cardiophrenic angle.

Keywords: pericardial cyst, mediastinal masses, videoassisted thoracotomy, incidental finding.

Abbreviations:

CT = computed tomography

VATS = video-assisted thoracoscopic surgery

Pericardial cysts comprise a relatively rare subset of thoracic tumors, accounting for approximately 5 to 10% of cases.^{1,2} They rank as the third most common mediastinal mass, following thymomas and thymic carcinomas.^{2,3} The estimated incidence of pericardial cysts is roughly 1 in 100,000 individuals.⁴ These cysts typically present with diameters of less than 3 cm, although their size can vary considerably, ranging from 2 to 28 cm, with

RESUMEN

Los quistes pericárdicos son infrecuentes, generalmente benignos y de curso asintomático. La mayoría se localizan en el ángulo cardiofrénico derecho, ocurren secundarios a malformaciones embrionarias y se presentan como un hallazgo en estudios complementarios. El manejo puede ser conservador o quirúrgico, y se individualiza según la clínica. Describimos el caso de una paciente con un quiste pericárdico de localización inusual, en ángulo cardiofrénico izquierdo.

Palabras clave: quiste pericárdico, masas mediastinales, toracotomía videoasistida, hallazgo incidental.

those exceeding 8 to 9 cm in diameter being classified as giant cysts.⁵

The majority of pericardial cysts are congenital in origin, resulting from embryological malformations due to defects in the development of the coelomic cavity, which occur when the pericardium becomes entrapped during embryonic development.⁶ However, acquired cases can also arise following thoracic surgery, chest trauma, or pericarditis.^{7,8} Typically, these cysts are asymptomatic, although they may present with symptoms such as dyspnea, chest pain, and persistent cough. Furthermore, compression of adjacent structures can lead to complications like superior vena cava

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syndrome. Diagnosis is often incidental, with chest X-rays revealing a round radiopaque mass.^{9,10} Characteristic imaging features include a single, thin-walled, round, well-defined lesion with clear fluid content and no contrast enhancement.^{5,11} The right costophrenic angle is the most common site of presentation, often associated with dextrocardia when located in this region.¹² Although rare, potential complications include cardiac tamponade, a severe and potentially life-threatening outcome.¹³ We present a case of a patient with a pericardial cyst located in the left costophrenic angle, an uncommon site.

CASE DESCRIPTION

A 77-year-old woman with a longstanding history of systemic hypertension spanning over two decades, treated with atenolol and chlorthalidone 50/12.5 mg, presented with nonspecific chest pain and exertional dyspnea, which significantly impaired her functional capacity. A chest radiograph revealed a round radiopaque mass in the left costophrenic angle, prompting further evaluation with a plain and contrast-enhanced computed tomography (CT) scan of the chest (*Fig. 1*).

The CT scan demonstrated an extrapulmonary intrathoracic cystic lesion in the left costophrenic angle, measuring approximately 290 ml in volume. Based on the imaging findings, a differential diagnosis of pericardial mesothelial cyst versus pleural cyst of unknown etiology was considered. Following consultation with the cardiothoracic surgery department, a diagnostic and therapeutic *video*-assisted thoracoscopic surgery (VATS) was planned (*Fig. 2*).

The procedure involved thoracoscopy via the sixth left intercostal space, followed by single-port thoracoscopic resection of the pericardial cyst. Intraoperatively, an

extrapulmonary cystic lesion dependent on the parietal pericardium with a highly vascularized capsule was observed. Two feeding vessels, located anteriorly and posteriorly, were identified, ligated, and surgically excised. Subsequent puncture of the cyst evacuated approximately 290 ml of citrine fluid, which was sent for cytological and cytochemical analysis. The cyst capsule was then excised and submitted for histopathological examination. The cytochemical analysis revealed a transparent, straw-yellow fluid with a pH of 8.00, protein content of 2 g/dl, glucose level of 20 mg/dl, and absence of blood cells or microorganisms. The culture remained negative after 48 hours of incubation. The patient recovered uneventfully and was discharged after a fourth-day hospital stay (*Fig. 3*). Histopathological examination of the cyst capsule confirmed the diagnosis of a giant pericardial cyst.

COMMENT

The diagnosis of pericardial cysts is typically incidental, often detected on chest radiography, but computed tomography and cardiothoracic magnetic resonance imaging are the modalities of choice for accurately determining the size, location, and characteristics of the lesion.¹⁴

Transesophageal echocardiography is employed to assess the hemodynamic impact on right ventricular ejection flow and to evaluate potential constrictive pathophysiology affecting both ventricular chambers.^{11,15} With the advent of minimally invasive surgical techniques, video-assisted thoracoscopic surgery (VATS) has become an invaluable tool not only for diagnostic confirmation but also for therapeutic intervention.

The management of pericardial cysts spans a spectrum from conservative approaches, characterized by serial imaging

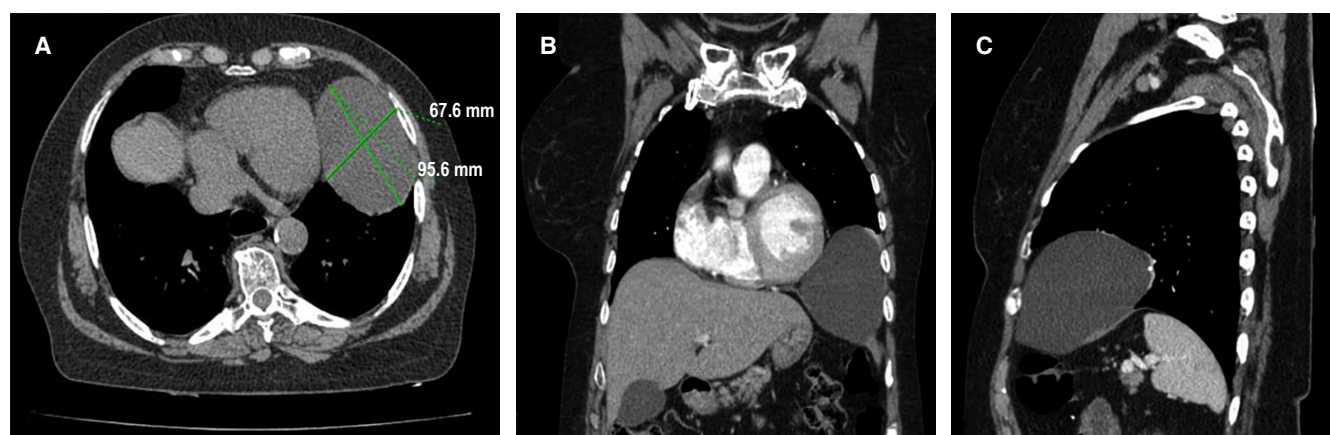


Figure 1: A) Plain axial computed tomography scan showing a cystic lesion in the left pericardial region measuring 6.76 × 9.56 cm, with an approximate volume of 290 ml. B-C) Contrast-enhanced coronal and sagittal computed tomography scans showing the presence of a pericardial cyst over the left costal diaphragmatic sinus.

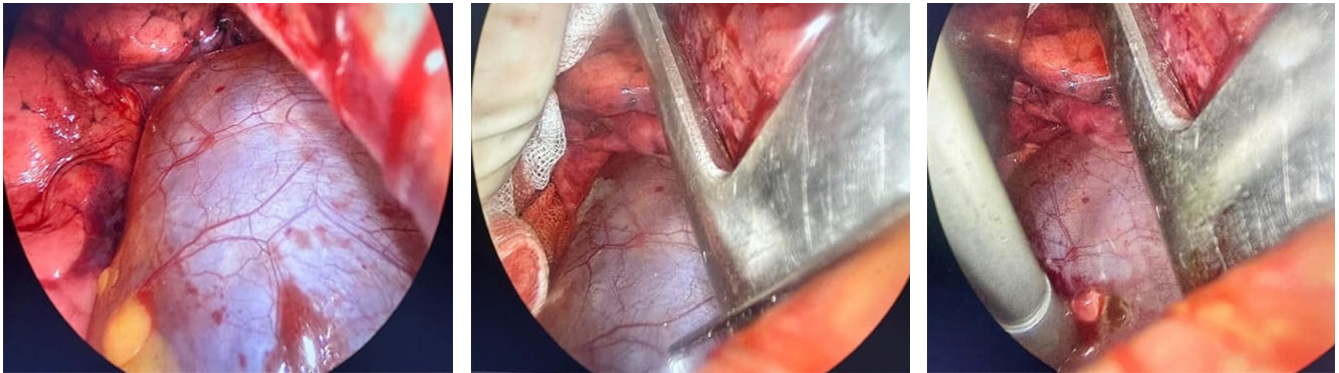


Figure 2: Intraoperative images showing the presence of an extrapulmonary cystic lesion dependent on the parietal pericardium with a highly vascularized capsule.

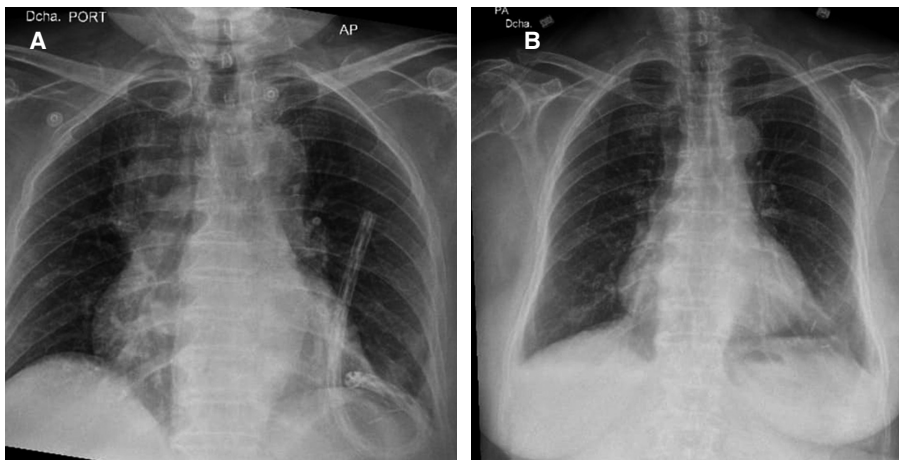


Figure 3:

A) Anteroposterior chest X-ray immediately after surgery, showing the presence of a Kardia Spiral pleural drain in the left hemithorax. **B)** Control anteroposterior chest X-ray two days after surgery.

surveillance in asymptomatic cases, to invasive procedures, including percutaneous aspiration and surgical excision, which are typically reserved for symptomatic cases or those associated with complications. In the present case, surgical removal via a minimally invasive approach was chosen for due to the cyst's size and symptomatic nature.^{14,15}

The decision-making process for managing pericardial cysts hinges on several factors, including the presence or absence of symptoms secondary to compression of adjacent structures, the size of the mass, the patient's hemodynamic status, and the behavior of the mediastinal lesion.¹⁵ According to the European Society of Cardiology guidelines, initial treatment with percutaneous aspiration and ethanol sclerotherapy is recommended for single, small cysts or in cases where surgical risk is high, while surgical resection via VATS or thoracotomy is advocated for large, symptomatic cysts as a second-line therapy.^{9,16} Notably, minimally invasive approaches offer several advantages, including reduced perioperative and postoperative complications, shorter hospital stays, and a lower risk of infection.¹⁶

CONCLUSIONS

Pericardial cysts often present with nonspecific symptoms, necessitating a thorough and meticulous evaluation to prevent diagnostic delays and ensure timely intervention. The vague chest symptoms exhibited by the patient in this case underscore the importance of considering a broad differential diagnosis when assessing chest syndromes.

Management must be tailored to the individual, as large cysts, such as the one presented, can cause compressive symptoms in adjacent structures, potentially leading to severe complications if left untreated. Currently, percutaneous aspiration and cyst resection via video-assisted thoracoscopy are the recommended treatment modalities, offering an effective and minimally invasive approach to managing these lesions.

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