A Large Pericardial Cyst in the Left Cardiophrenic Causing Persistent Chest Pain and Cough: A Case Report

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Patient: Female, 57-year-old
Final Diagnosis: Pericardial cyst
Symptoms: Chest pain • dry cough • dyspnea
Medication: —
Clinical Procedure: —
Specialty: Cardiology

Objective: Rare disease
Background: Pericardial cyst is a rare benign mass of the mediastinum. More than two-thirds of pericardial cysts are located in the right cardiophrenic angle and less than one-third in the left cardiophrenic angle. Most cases are asymptomatic and discovered incidentally during thoracic imaging such as chest X-ray, CT scans, and transthoracic echocardiograms. When pericardial cysts present with symptoms, they are often persistent and non-specific and include chest pain, dyspnea, and persistent cough. The optimal management of pericardial cysts is unclear, and no large studies regarding safety, efficacy, and long-term follow-up exist. Management strategies include cyst resection with sternotomy, thoracotomy or video-assisted thoracic surgery, cyst aspiration, and sclerosis after aspiration. The optimal mode of follow-up for asymptomatic cases is also unclear.

Here, we present a case of a large pericardial cyst in the left cardiophrenic angle in a middle-aged Danish woman with persistent and unresolved dyspnea and chest pain.

Case Report: A 57-year-old woman was referred for transthoracic echocardiography because of year-long cough and left-sided chest pain, which were exacerbated in the supine position. The echocardiography revealed a large cystic structure over the left ventricle. A cardiac CT scan and MRI scan were performed, confirming the presence of a large pericardial cyst with no communication with the pericardium. The cyst was surgically removed via thoracotomy.

Conclusions: Pericardial cysts should be considered as a rare differential diagnosis, giving rise to common cardio-pulmonary symptoms such as chest pain, dyspnea, and cough.

Keywords: Mediastinal Cyst • Echocardiography • Dyspnea • Magnetic Resonance Imaging • Tomography, Spiral Computed • Chest Pain

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/937785
Background

Pericardial cysts are a rare benign mass of the mediastinum. They contain a clear serous fluid. Histologically, they are lined with a single layer of mesothelial cells and the remainder of the wall is made up of collagen and elastic fibers [1]. Most cases are congenital but can also be acquired after cardiothoracic surgery or following trauma [2]. Pericardial cysts are most commonly found in the right cardiophrenic angle (70% of cases). Cysts in the left cardiophrenic angle are less common (22% of cases). Very rarely, they occur in the posterior or anterior superior part of the mediastinum (8% of cases) [3].

More than 50% of pericardial cysts are asymptomatic and are often diagnosed incidentally in relation to chest X-rays, CT scans, or echocardiography [2,3]. In symptomatic cases, the most commonly reported symptoms are dyspnea, chest pain, and persistent cough [2,3]. Symptoms mostly arise when structures adjacent to the cyst such as the lungs or the right atrium are compressed [2-6]. Very rarely, symptoms such as spontaneous pneumothorax, atrial fibrillation, cyst rupture, and even cardiac tamponade have been reported [2-5].

In this case report, we present a patient with a pericardial cyst in the left cardiophrenic angle presenting with persistent and unresolved cough, dyspnea and chest pain for several years.

Case Report

A 57-year-old woman with a history of severe allergic asthma, atopic dermatitis, and chronic urticaria was referred for a chest X-ray by her general practitioner. The reason for the referral was a persistent dry cough and intermittent chest pain when she was supine on her left side and dyspnea corresponding to NYHA class 2B despite reportedly well-managed asthma.

A chest X-ray showed a large, round opacity obscuring the left cardiophrenic angle. A mediastinal cyst was among the suspected pathologies; therefore, a CT scan was done, which revealed a large cyst-like structure measuring 7.9×5.4 cm (Figure 1). Comparison to a CT scan from 2013 showed that the structure was also present here but went unnoticed. The structure had increased in size from 2013 to 2021.

A transthoracic echocardiogram ascertained a large, well-defined, cyst-like structure over the apex of the left ventricle (Figure 2). There was normal right and left ventricular function and the structure did not compress the left ventricle. The structure was filled with anechoic fluid and no flow was detected in it.

Lastly, a cardiac MRI was done to determine if the cyst-like structure had a communication tract to the pericardium or other structures in the mediastinum. The MRI showed no communicating tract and thus confirmed a large pericardial cyst over the heart’s apex (Figure 3).

The patient was referred to the nearest cardiothoracic surgery department for cyst resection. Before surgery, a body plethysmography was done, which showed normal lung function.

The cyst was removed in toto via left thoracotomy without the need to open the pericardium. The pathologic report confirmed the diagnosis of pericardial cyst. Macroscopically, it was described as adhering to the pericardium, with no adherence to the lung parenchyma. It had a benign appearance and was filled with a clear serous fluid. The patient awaits follow-up.
Discussion

The incidence of pericardial cysts is about 1: 100,000 and they make up approximately 7% of mediastinal tumors [2]. More than half of all cases are asymptomatic and are often diagnosed incidentally on routine chest X-rays, which typically show an opaque and clearly-demarcated bulging of the right or left cardiac border.

Pericardial cysts vary in size, with sizes less than 3 cm reported in the majority of cases [3]. Cysts as large as 28 cm have been reported, but this is extremely rare [7].

Radiologically, the differential diagnosis includes mediastinal pathologies such as bronchial cysts, localized pericardial effusions, teratomas, neuroenteric cysts, and lymphangioma [2].

The pericardial cyst described in this case report was 7.9 cm on its largest axis, which places it on the larger side of the spectrum. Furthermore, the location on the left cardiophrenic angle is quite rare and accounts for less than one-fourth of all cases [2,3].

Management of pericardial cysts differs and depends on whether the patient is symptomatic, if the cyst increases in size, and if imaging shows signs of a solid component in the cyst cavity [3].

In symptomatic cases, the consensus is that surgical intervention is warranted [2,3]. Cyst resection with sternotomy, thoracotomy, or video-assisted thoracic surgery is the preferred approach [2,3]. Cyst aspiration is a less invasive approach but is associated with recurrence in up to one-third of patients [3]. Sclerosis after aspiration may reduce the recurrence rate [2,3]. The consensus seems to be that contrast-enhanced CT is the preferred mode of follow-up for asymptomatic patients [3].

Other imaging possibilities are transthoracic echocardiography and cardiac MRI.

It is important to stress that there is a lack of larger, randomized, controlled studies in this field and most of our knowledge stems from smaller reviews, case reports, and case series. Thus, there is very limited data from which guidelines concerning surgical resection and optimal follow-up of asymptomatic cysts can be derived.

With regard to the risks associated with the radiation dose in relation to CT with contrast, it can be questioned if this is the optimal mode of follow-up for asymptomatic patients. Transthoracic echocardiography performed by a trained practitioner seems to be a safe and effective modality, especially in asymptomatic patients.

Conclusions

This case report presents a large, left-sided pericardial cyst in a middle-aged woman with chronic chest pain and cough. A pericardial cyst was initially suspected after a chest X-ray and cardiac CT scan, and MRI verified the suspicion. A transthoracic echocardiogram was done to evaluate any effect on the heart's function. The patient's cyst was removed via thoracotomy and the diagnosis was confirmed by pathology.

Pericardial cysts should be kept in mind as a rare differential diagnosis, giving rise to common cardio-pulmonary concerns. Symptoms are often non-specific, and the diagnosis should be considered when other, more common differential diagnoses have been ruled out as the cause of symptoms. A pericardial cyst should also be considered as a differential diagnosis of cystic shadows adjacent to the heart on chest X-rays.

It is the authors' opinion that transthoracic echocardiography is a safe and effective method of follow-up, which also provides valuable information about the effect on the overall function of the heart.

Declaration of Figures' Authenticity

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References:

1. Patel J, Park C, Michaels J, et al. Pericardial cyst: Case reports and a literature review. Echocardiography. 2004;21(3):269-72
2. Kar SK, Ganguly T. Current concepts of diagnosis and management of pericardial cysts. Indian Heart J. 2017;69(3):364-70
3. Hekmat M, Ghaderi H, Tatari H, et al. Giant pericardial cyst: A case report and review of literature. Iran J Radiol. 2016;13(1):e21921
4. Khayata M, Alkharabsheh S, Shah NP, Klein AL. Pericardial cysts: A contemporary comprehensive review. Curr Cardiol Rep. 2019;21(7):64
5. Bogdanovic A, Radojkovic M, Tomasevic RJ, et al. Presentation of pericardial hydatid cyst as acute cardiac tamponade. Asian J Surg. 2017;40(2):175-77
6. Noori NM, Shafighi Shahri E, Soleimanzadeh Mousavi SH. Large congenital pericardial cyst presented by palpitation and left ventricle posterior wall compression: A rare case report. Pediatr Rep. 2021;13(1):57-64
7. Braude PD, Falk G, McCaughan BC, Rutland J. Giant pericardial cyst. Aust N Z J Surg. 1990;60(8):640-41