Chula Med J. November - December 2025;69(6): 389 - 393 DOI : 10.56808/2673-060X.5583

Case report

Rare case of recurrent cystic mediastinal mass: giant pericardial cyst

Melina Rosita Tanadi[a, *], **Anggraini Dwi Sensusiati**[a, b]

[a] *Department of Radiology, Faculty of Medicine, Universitas Airlangga, Surabaya, East Java, Indonesia*
[b] *Universitas Airlangga Hospital, Surabaya, East Java, Indonesia*

Abstract

Pericardial cysts are unusual benign congenital malformations, with an incidence of 1 per 100,000 individuals. Although considered congenital lesions because of incomplete fusion during embryogenesis, there are other less frequent causes thereof, such as surgery, post-trauma, and inflammatory processes. A pericardial cyst can mimic a malignant mediastinal tumor, cardiac chamber enlargement, or a bronchogenic cyst on a chest X-ray. Most pericardial cysts are asymptomatic until they get bigger, after which they can cause symptoms such as dyspnea, sudden death, and cardiac tamponade, or the cyst may rupture. Radiological imaging plays an important role in ruling out diagnostic conditions, thereby preventing complications. Computed tomography (CT) is the modality of choice for pericardial cysts. Here, we report a case of a 59-year-old female who complained of shortness of breath and cough for 5 days before admission, accompanied by fatigue and nausea. Thoracic CT revealed there was a recurrent giant cystic mediastinal mass in the left hemithorax, and pathological anatomy was suggestive of a pericardial cyst.

Keywords: Giant pericardial cyst, mediastinal mass, pericardial cyst, shortness of breath.

A pericardial cyst is a rare benign intrathoracic disease. The incidence thereof is 1 in 100,000 individuals. The cause can be congenital or from inflammation, trauma, or complications after heart surgery. Pericardial cysts caused by congenital abnormalities originate from incomplete fusion during embryogenesis, which leads to the herniation or weakness in the pericardial cavity and forms a diverticulum.[1] Patients with pericardial cysts are generally asymptomatic and will only experience symptoms when there is a pressure effect on the surrounding structures. Compression of the lung and hilum indicates obstruction of the main bronchus and compression of the surrounding lung lobes.

There are many differential diagnoses of a pericardial cyst, such as other thoracic masses, ventricular aneurysm, solid tumor, fat pad, and loculated pleural effusions. Therefore, imaging modalities are essential to rule out the diagnosis.[2, 3] Clinical diagnosis can be made using a plain chest X-ray (CXR), where the cyst is characterized by a mass that is well-defined, round, and attached to the heart. The cyst is statistically located in the right cardiophrenic angle with an incidence of 51.0%–70.0% and 22.0%–38.0% on the left side.[4, 5] A computed tomography (CT) scan without contrast is the modality of choice for viewing pericardial anatomy to determine the location and characteristics. Radiological findings of pericardial cysts include a solitary, non-enhanced, thin-walled, homogeneous mass without solid components.[6]

Case report

A 59-year-old female with complaints of shortness of breath, accompanied by a cough with phlegm that worsened for 5 days before hospital admission; the patient felt weak and had a decreased appetite. The patient also complained of nausea and vomiting. There was no history of tuberculosis or smoking. CXR revealed there was a round-shaped opacity with a well-defined border on the left side of the mediastinum, with a positive silhouette sign and negative hilar overlay

*Correspondence to: Melina Rosita Tanadi, Department of Radiology, Faculty of Medicine, Universitas Airlangga, Surabaya, East Java, Indonesia.
E-mail: melinarosita@gmail.com
Received: January 20, 2025
Revised: September 18, 2025
Accepted: October 20, 2025

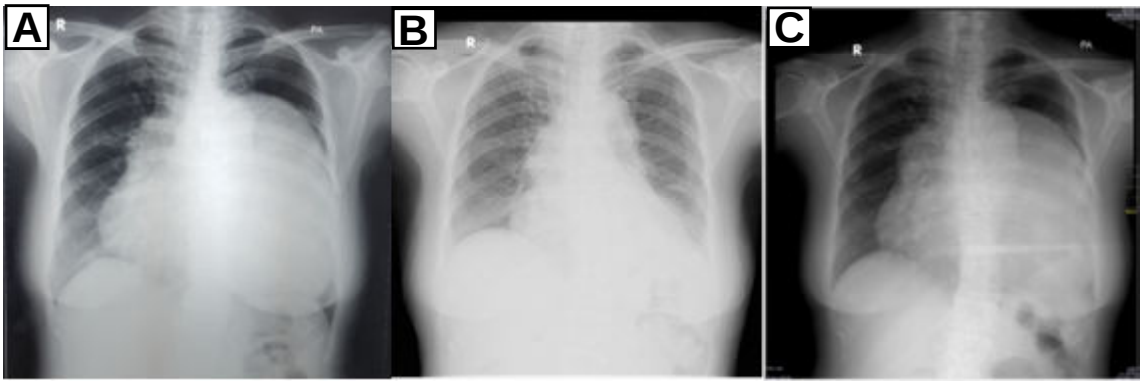

Figure 1. A) Chest X – ray **(A)** on patient December 13th 2022,there is opacities in mediastinum left side, rounded shape, with well-defined border, silhouette sign with left heart border**; (B)** On December 20th 2022, after thoracocentesis of the cystic mass, size was decreased, and **(C)** Two months after thoracocentesis there is opacities in left side of mediastinum.

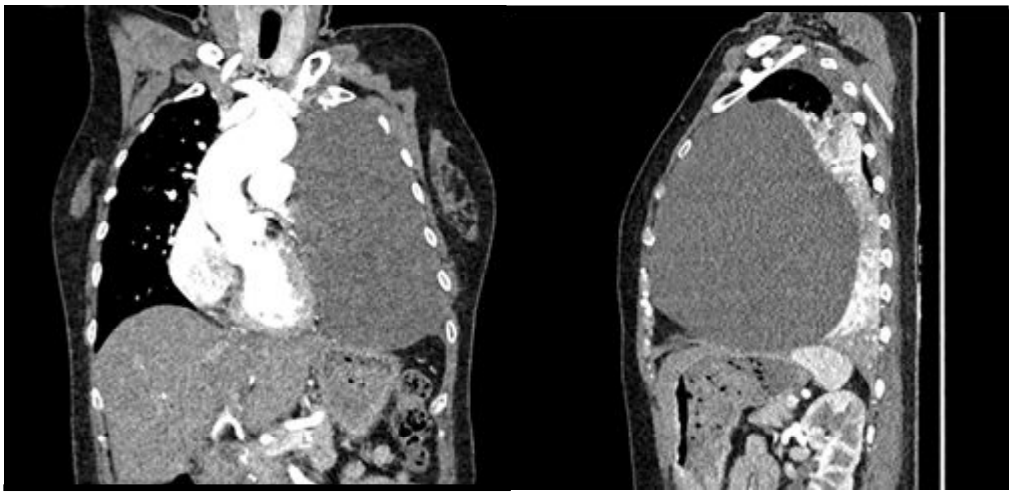

Figure 2. Coronal and sagittal plane of contrast chest CT showing cystic mass, round shaped, well defined margin, thin walled, with size ± 14.6 × 9.1 × 16.7 cm in left hemithorax, suggesting from mediastinum anterior until posterior. CT, computed tomography.

sign, which was suggestive of a mediastinal mass **(Figure 1A).** A chest CT scan with contrast was then performed **(Figures 2 and 3).** There was a cystic (22 HU) mass in the left hemithorax, with a well-defined border that was thin-walled and no infiltration to adjacent structures, which caused compressive atelectasis of the inferior lobe of the left lung and pushed the mediastinum to the right. The mass appeared attached to the aortic arch and pulmonary trunk with a distinct border, and there was no visible atelectasis in the superior lobe of the left lung. In addition, pleural effusion (14 HU) was seen in the pleural cavity of the left hemithorax. It was also observed that the mass was attached to the left side of the heart wall with clear boundaries, and there was no fat line between the heart and cyst.

Thoracocentesis was performed on the patient, as well as a CXR for evaluation, which revealed a decrease in the mass size **(Figure 1B).** Two months following the initial thoracocentesis, a follow-up CXR was performed, revealing persistent opacities in the left mediastinum at the same location as the initial imaging **(Figure 1C).**

Pathological examination of the fluid obtained via thoracocentesis revealed a reddish serous fluid with no identified malignant cells. Following the initial aspiration, the size of the lesion decreased but subsequently recurred. As a result, surgical excision of the mediastinal cyst was performed. Histopathological analysis thereof confirmed a benign cyst, which was consistent with the features of a pericardial cyst **(Figure 4).**

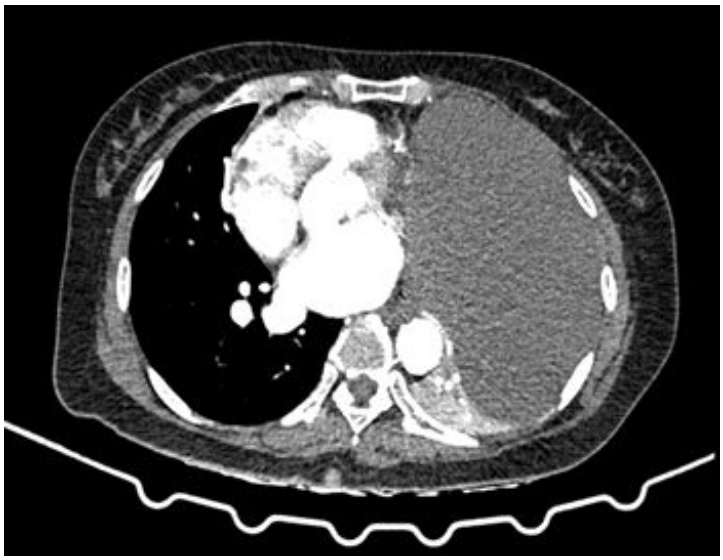

Figure 3. Axial plane of contrast chest CT showing cystic mass, round shaped, well-defined margin, thin walled, in left hemithorax, there is no enhancement in cystic mass wall, with distinct border with aorta and left border of the heart, some part of pericardium wall was not clearly seen in left border of the heart. CT, computed tomography.

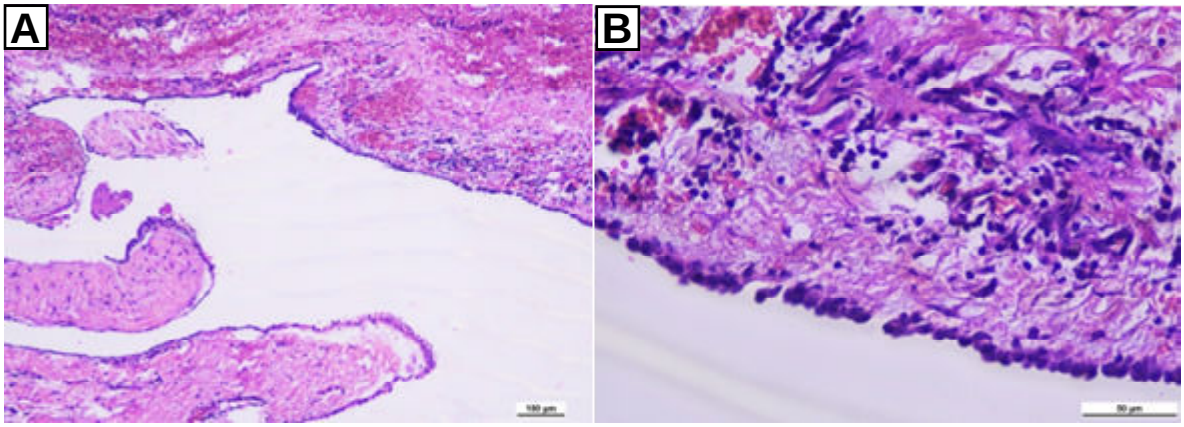

Figure 4. Histopathologic analysis of pericardial cyst surrounding with fibrous layer (A, H&E, 10×); Histopathologic analysis of pericardial cyst, showing the cyst lining with cuboid epithelial. (B, H&E, 20×)

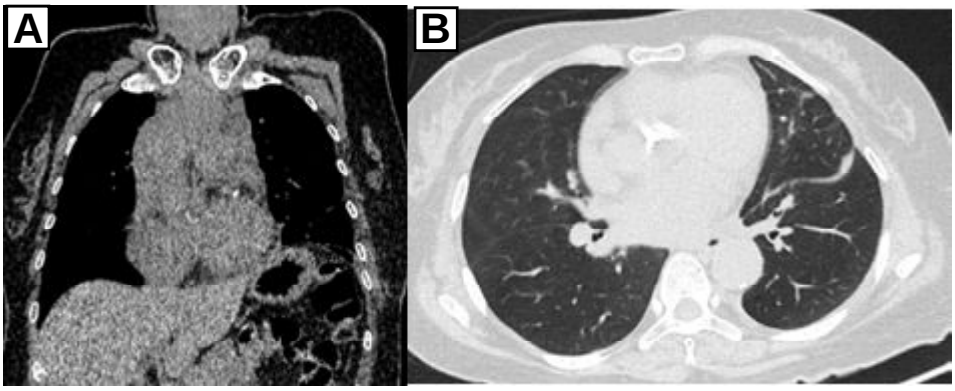

Figure 5. Coronal **(A)** and axial plane **(B)** of chest CT from a follow-up thoracic CT scan postoperatively. There is no intrathoracic cystic mass is identified in the lungs or mediastinum. Minimal pleural effusion is observed in the left pleural cavity. CT, computed tomography.

The patient was evaluated during postoperative follow-up using a non-contrast thoracic CT scan. The imaging revealed no evidence of residual or recurrent cystic or solid masses within the left intrathoracic cavity **(Figure 5).** Minimal left pleural effusion was observed, which was likely attributable to postoperative changes rather than indicative of ongoing pathology.

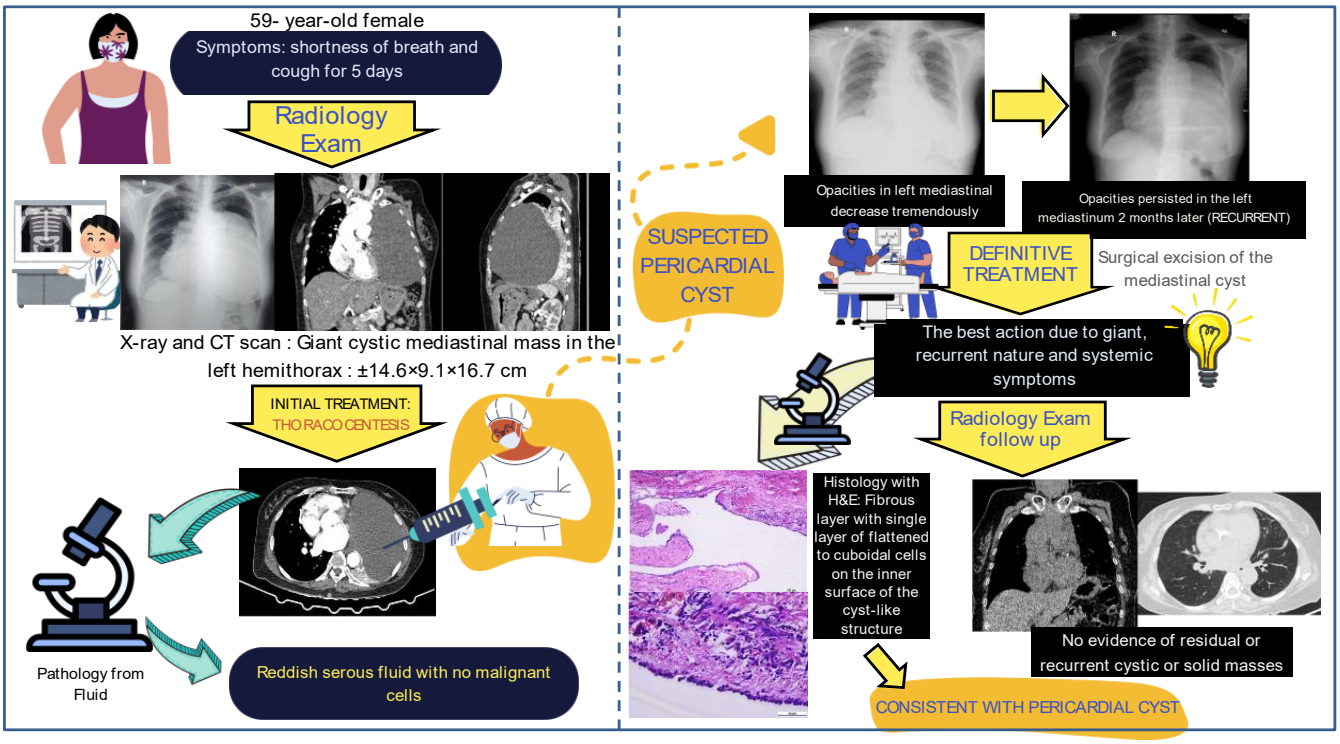

Figure 6. Case summary of a 59-year-old female with a recurrent giant mediastinal cyst, surgically confirmed as a pericardial cyst and resolved after excision.

Discussion

Pericardial cysts contain clear fluid content; therefore, it is often called a "spring water cyst," which is shown by a clear, round, oval mass with regular edges. This is in accordance with the case in this patient, where there was a localized homogenous fluid collection with firm, regular borders, non-septate, thin-walled, oval, which does not enhance with contrast administration directly adjacent to the pericardial border.[4]

Pathological findings of pericardial cysts usually include connective tissue with collagen and elastic fibers, with the cyst lining consisting of a single layer of mesothelial cells, and sometimes calcification can rarely be found in the lining of the cyst.[7, 8] The pericardial cyst in this case has pathological anatomy findings of a single layer of flattened to cuboidal cells on the inner surface of the cyst-like structure. These cells can be composed of mesothelial cells, which line the serous cavities, such as the pericardium, pleura, and peritoneum. The wall in this case was also composed of fibrous connective tissue with inflammatory cells. However, there was no evidence of any atypical cells or malignancy to rule out other neoplastic masses such as mesothelioma.

A pericardial cyst can be mistaken for a loculated pericardial effusion, malignant mediastinal tumor, cardiac chamber enlargement, or bronchogenic cyst. A CT scan is the main modality for pericardial cyst diagnosis. A pericardial cyst can be ruled out if a thin wall is observed separating the cyst from the cavum pericardium. Early diagnosis of a pericardial cyst is important to prevent sudden death, cardiac tamponade, rupture of the cyst, obstruction of ventricular outflow, congestive heart failure, pericarditis, and bronchial obstruction.[4, 5, 6, 9] The radiological imaging for pericardial cysts is also useful for determining what treatment actions should be taken for the patient.

The CT scan findings in this case revealed no fat line or thin wall separating the cyst from the heart, but the cyst and the heart still exhibited clear boundaries. Moreover, there was no invasion from the cystic mass to the adjacent structure. Based on the thoracocentesis and pathology findings, no malignancy was found. These findings support the diagnosis of a pericardial cyst.

Pleural fluid samples can also be an indication of a malignant process, an infectious process, or kidney disease. Exudative pleural fluid is commonly found in malignancies or infectious diseases. The differentiation

between exudative and transudative pleural effusions can be determined by measuring the cholesterol levels in the pleural fluid, with exudative effusions typically exhibiting higher cholesterol concentrations. This elevation is often associated with underlying pathological processes, including inflammation, infection, or malignancy.[10] In the present case, thoracocentesis was attempted; however, pleural fluid sampling was not achieved, likely because of the minimal effusion volume observed on imaging. As a result, clinical management was directed primarily toward the cystic intrathoracic mass. Fluid aspirated from the cystic lesion was serous with a reddish appearance, and the cytological analysis thereof revealed no evidence of malignant cells **(Figure 6).**

The diameter of the pericardial cyst usually ranges from 1 to 5 cm, while in this case, the size was considered giant, reaching approximately 14.6 × 9.1 × 16.7 cm. Giant pericardial cysts are not common. Small pericardial cysts are usually asymptomatic, and close observation can be performed to assess the development of the cyst size. In some cases, spontaneous resolution can occur, but actions that can be taken include percutaneous drainage or surgery.[9] In this case, the giant pericardial cyst was recurrent after percutaneous drainage; therefore, the best action was a thoracotomy and excision of the mass[5] **(Figure 6)**. In addition, this alleviated the patient's systemic symptoms of shortness of breath and weakness, which could risk the patient's hemodynamic stability.

Pericardial cysts mostly occur on the right side of the cardiophrenic angle, unlike our patient, whose cyst occurs on the left side. After surgery, the symptoms are expected to improve. The patient in this case had a thoracic CT scan performed weeks after surgery, which revealed no residual cystic mass and minimal pleural effusion.

Conclusion

Although pericardial cysts are considered benign masses, they can lead to complications such as cardiac tamponade and obliteration of the bronchus, which can be lethal, especially in a giant pericardial cyst. The role of radiology, the foremost of which is a CT scan, is performed for the early and accurate diagnosis and characterization of the pericardial cyst to provide appropriate treatment for the patient.

Acknowledgements

The authors would like to thank the patient who provided their informed consent to have their information published in this report.

Conflict of interest statement

Each of the authors has completed an ICMJE disclosure form. The authors declare that they do not have any potential or actual relationship, activity, or conflict of interest related to the content of this article.

Data sharing statement

Data generated or analyzed for the present report is included in this published article. Further details are available from the corresponding author upon reasonable request after the deidentification of the patient whose data are included in the report.

References

1. Suthar PP, Kounsal A, Chhetri L, Mehta CM, Ansari SM, Shingade R. Pericardial cyst at an unusual location: the role of CT imaging. Cureus 2023;15:e42403.
2. Varvarousis D, Tampakis K, Dremetsikas K, Konstantinedes P, Mantas I. Pericardial cyst: an unusual cause of chest pain. J Cardiol Cases 2015; 12:130–2.
3. Li M, Yang C, Li J, Jia D, Wang Y, Xie W, et al. A large pericardial cyst mimicking a unilateral pleural effusion: a case report. Medicine (Baltimore) 2023;102:e33540.
4. Hekmat M, Ghaderi H, Tatari H, Arjmand Shabestari A, Mirjafari SA. Giant pericardial cyst: a case report and review of literature. Iranian J Radiol 2016;13:e21921.
5. Al Khalifa AR, Al Khalifa A. Large pericardial cyst mimicking recurrent unilateral pleural effusion on CT scan: a case report and literature review. Cureus 2023; 15:e47735.
6. Kaklikkaya I. A giant pericardial cyst. Cardiovasc J Afr 2011;22:e1–3.
7. Ershadi R, Vahedi M. Uncommon location of a giant pericardial cyst: a case report. Iran J Med Sci 2021;46: 308–11.
8. Feigin DS, Fenoglio JJ, McAllister HA, Madewell JE. Pericardial cysts: a radiologic-pathologic correlation and review. Radiol 1977;125:15–20.
9. Meschisi M, Piccione MC, Bella GD, Zito C. Multimodalities imaging in diagnosis of pericardial cyst. J Cardiovasc Echogr 2015;25:60–2.
10. Sutanto E, Kurniawan LB, Mangarengi F. Total cholesterol analysis for differentiating exudates and transudates in pleural fluids. Indonesian J Clin Pathol Med Lab 2018;24:136–40.