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A Large Pericardial Cyst in a Twelve-Year-Old Boy: A Case Presentation

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Abstract

Background: Pericardial cysts are rare in the pediatric population, with congenital abnormalities being the most common cause. These cysts can vary in size and may lead to symptoms if they exert pressure on surrounding structures. This case report focuses on a huge pericardial cyst found in a pediatric patient.

Case presentation: A 12-year-old boy presented with a history of chronic cough and episodes of syncope. Transthoracic echocardiography and cardiac computed tomography angiography revealed a large extracardiac cyst located on the roof of the left atrium, measuring 8.5 cm by 7 cm. All laboratory tests were within normal limits. Given the patient's symptoms, a successful excision of the pericardial cyst was performed.

Conclusion: Surgical management of large pericardial cysts is a safe and effective treatment option.

Keywords: Pericardial cyst • Pediatrics • Surgery • Pericardial Cyst (PC) • TransThoracic Echocardiography (TTE)

Introduction

Pericardial Cyst (PC) is a rare disease in pediatrics. The most common cause of pericardial cyst is congenital abnormalities that occur in the middle mediastinum. Inflammation; malignant lesion and chest trauma are uncommon causes of it. It includes approximately 6 percent of all mediastinal masses and up to 11% of all mediastinal cysts. Pericardial cyst most often is with no symptoms and find accidentally. It is identified by echocardiography or CT scan and confirmed on histopathology after successful surgical excision [1].

The global incidence of pericardial cyst is 1:1,00,000 in people. Previously, twenty pericardial cyst cases reported in pediatrics younger than 18 years.

This paper introduces a pediatric case with final diagnosis of large pericardial cyst

Case Presentation

A 12-year-old boy presented with a history of chronic cough that began at the age of three. His initial diagnosis was hyperreactive airway disease, for which he was treated with antihistamines, salbutamol and corticosteroid spray. Over the past month, he experienced several episodes of syncope and dyspnea, prompting a referral to the cardiology clinic.

The patient is originally from Afghanistan but currently resides in Robat Karim, a city in southern Tehran, Iran. His birth history was unremarkable and he has been immunized according to the Iranian routine vaccination schedule.

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Upon examination, the patient appeared well-nourished and developmentally appropriate for his age. His pulse rate was 100 beats per minute and both lung and abdominal examinations were normal. On precordial examination, heart sounds were soft, with no murmurs detected.

A Trans Thoracic Echocardiogram (TTE) was performed, which reported a large extracardiac cyst on the roof of the left atrium measuring 8.5 cm by 7 cm. The echocardiography findings also indicated mild to moderate Left Atrial Enlargement (LAE) and Left Ventricular Enlargement (LVE), with a Left Ventricular Ejection Fraction (LVEF) of 68%. Additionally, moderate Mitral Regurgitation (MR) was noted, while The Right Atrium (RA) and Right Ventricle (RV) were of normal size and function. Mild to moderate Tricuspid Regurgitation (TR) was present, with a Pressure Gradient (PG) of 20 mmHg and no pericardial effusion was observed (Figure 1).

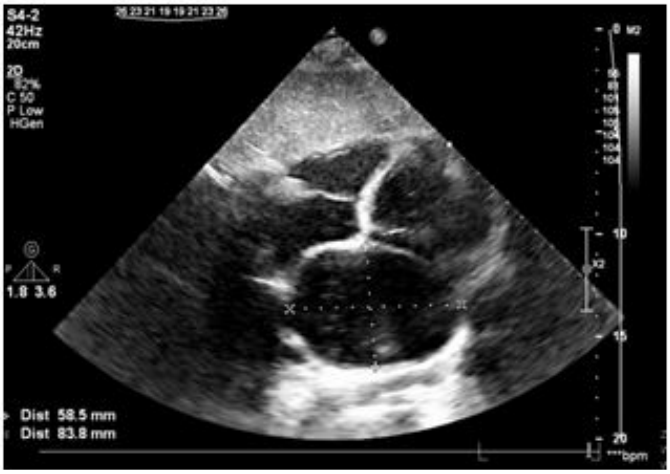

Figure 1. Pericardial cyst in echocardiography.

A cardiac Computed Tomography Angiography (CTA) was subsequently performed, revealing a large cystic lesion measuring approximately 88.5 mm × 88 mm × 59 mm, located posterior to the ascending aorta and on the roof of the left atrium. This lesion could represent a diverticulum of the pericardium or a developmental cyst, such as a bronchogenic cyst (Figure 2).

Hematological laboratory tests showed a hemoglobin level of 13.9 g/dL, a white blood cell count of 10,000 cells/μL, a platelet count of 164,000/mm^3 and an erythrocyte sedimentation rate of 2 mm/h. The findings from the cardiac CTA and chest X-ray (AP-lateral view) are illustrated in (Figures 2 and 3).

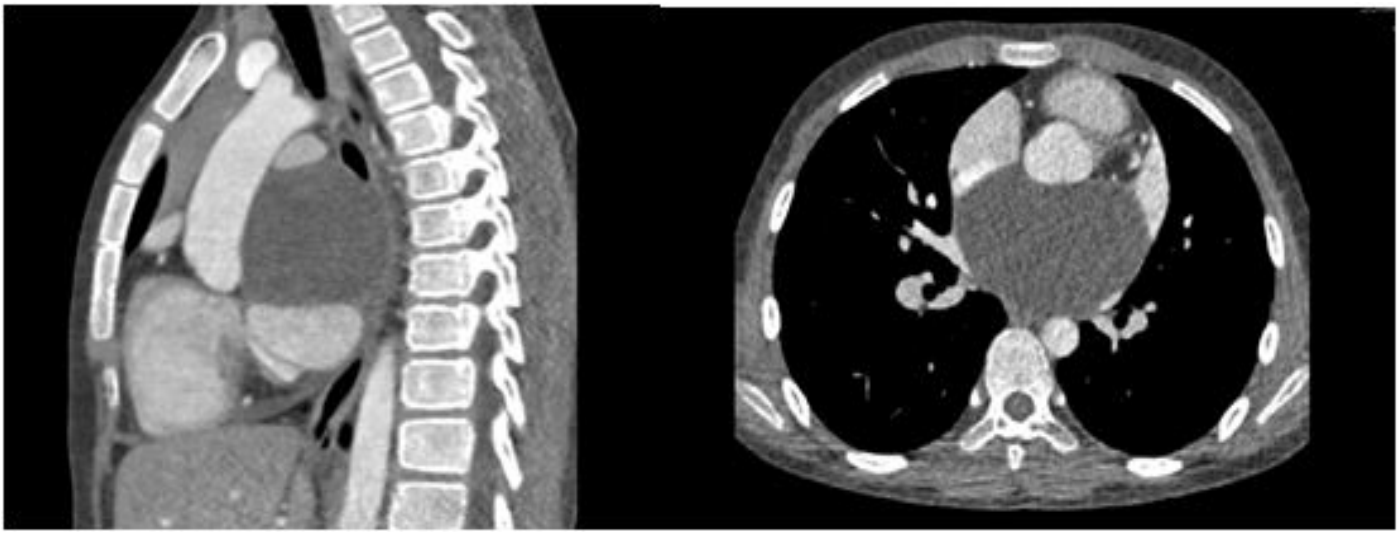

Figure 2. Pericardial cyst in cardiac CTA.

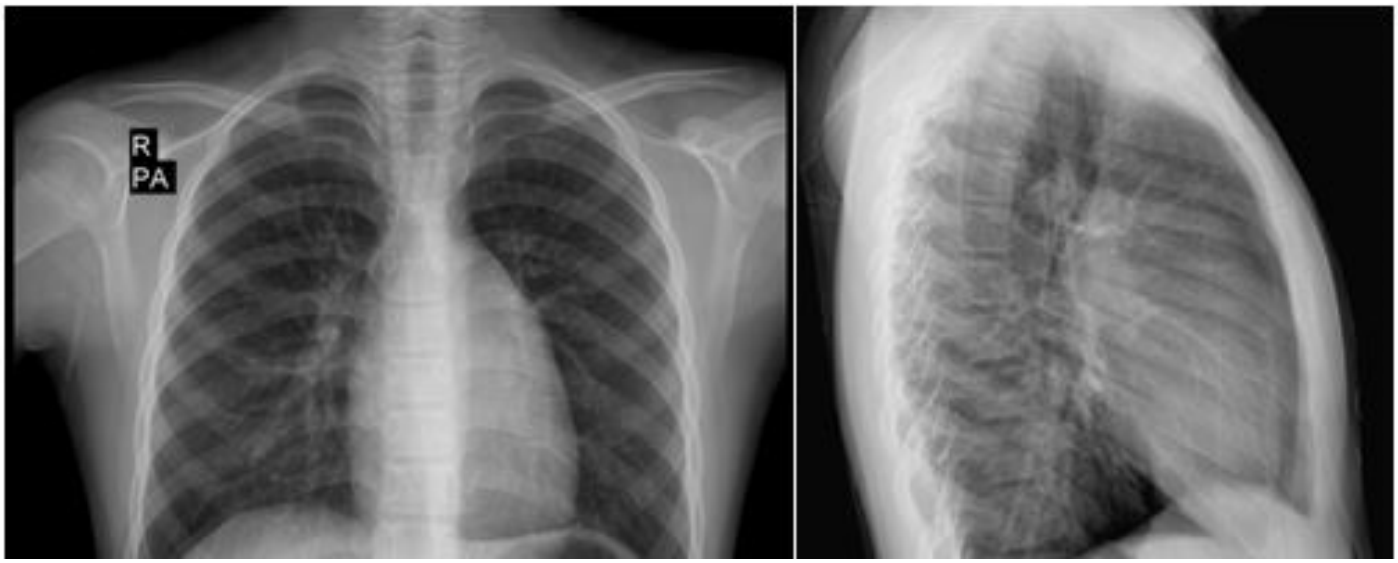

Figure 3. Chest x ray (AP –Lateral view).

Given the patient's symptoms and the size of the epicardial cyst, surgical management was deemed necessary. The cyst was excised *via* median sternotomy. Histopathological examination revealed a hypocellular structure with a few mixed inflammatory cells in a proteinous background, with no malignant cells identified. A direct smear for acid-fast bacilli (BK) was negative. The patient was discharged in good condition, with no signs or symptoms following recovery from surgery.

Discussion

Pericardial cysts are rare in the pediatric population, with most cases occurring in middle-aged adults. While the majority of PCs are asymptomatic, they can exert a compressive effect on mediastinal structures, leading to symptoms such as chest pain, dyspnea and tachypnea [1,2].

Approximately seventy percent of PCs originate from the right cardiophrenic angle, followed by the left cardiophrenic angle and the posterior and anterior superior mediastinal spaces [2,3].

The majority of PCs size are less than 3 cm; thus, cysts larger than 5 cm are classified as giant PCs [4] Kumar S, et al. reported a giant pericardial cyst measuring 10.0 cm × 9.5 cm × 9.0 cm in a 5-year-old child who presented with chest pain for three months. This case illustrates the rarity of giant PCs in the pediatric population and bears similarities to our patient's presentation [2,4,5].

Noori NM, et al. documented a rare case of a 9-year-old boy with a pericardial cyst measuring 8 cm × 7 cm × 6 cm located adjacent to the posterior wall of the left ventricle, who presented with palpitations. Our patient had a cyst of comparable size, although its location differed from that of the reported case [6].

Additionally, Noyes BE, et al. described an 11-year-old boy with asthma and wheezing, in whom a round mass was identified in the right cardiophrenic angle on Chest X-Ray (CXR) and a homogeneous mass measuring 2.5 cm × 4.9 cm was found next to the right pericardium on lung CT scan. The surgical team performed a thoracoscopic excision in this case, which parallels the treatment approach taken for our patient [7].

During a planned surgical procedure to correct a ventricular septal defect and patent ductus arteriosus in a one-year-old boy, the surgical team discovered a previously undiagnosed, sizeable PC. The team opted to excise the cyst in addition to performing the necessary repairs to the heart defects, this case highlights that most patients with PCs are asymptomatic [8].

Shirzadi R, et al. reported a 12-year-old boy with posterior mediastinal opacity which is detected on CXR due to respiratory symptoms during the coronavirus pandemic. In fact, there was a PC in posterior wall of the left atrium in TTE. Notably, the patient was asymptomatic and follow-up was recommended. In fact, follow-up is generally advised for asymptomatic patients with PCs [3].

In general, the decision between conservative follow-up and surgical management depends on the size and shape of the PCs, the patient's symptoms and the surgeon's experience. Surgical intervention is typically considered for large pericardial cysts and symptomatic patients [9].

This patient is unique due to the limited number of reports regarding symptomatic pericardial cysts in the pediatric population. He presented with a large pericardial cyst measuring over 5 centimeters located on roof of the left atrium, which is an uncommon site for such cysts. This finding warranted a surgical approach and the intervention proved to be a safe and effective treatment for his condition.

Conclusion

Giant pericardial cysts are rare in the pediatric population but can present with significant symptoms. Surgical management is a safe and effective treatment option for symptomatic patients. Further studies are warranted to better understand the long-term outcomes of surgical intervention in this population.

Acknowledgment

None.

Conflict of Interest

None.

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