

Pericardial cyst causing cardiac compression and shunt reversal at atrial level

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Abstract

Pericardial cyst is a rare disorder with incidence of 1:100000 and is usually asymptomatic. Atrial septal defect on the other hand has incidence of 1.6:1000 live births with 97% chance of survival till adulthood and rarely causes Eisenmenger syndrome in early adulthood. We present a case where there was dramatic occurrence of sudden hypoxia and features of right heart failure in otherwise healthy adult because of the combination of these two entities.

Keywords: pericardial cyst, shunt reversal

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Introduction

Most pericardial cysts are asymptomatic and detected during other investigations of the chest. They however can produce symptoms due to compression, inflammation, hemorrhage or rupture¹. Hemorrhage into a pericardial cyst following blunt trauma to the chest results in tamponade. Compression and right ventricular failure has also been reported². Spontaneous hemorrhage into the cyst in a young adult resulting right ventricular compression and recurrent syncope has also been reported⁴.

Atrial septal defect (ASD) is a common congenital heart disease. Majority of the patients with isolated defects are asymptomatic till adolescence or early adulthood. However, symptoms appear in the form of exercise intolerance and supraventricular arrhythmias when the pulmonary pressure starts to rise³. Severe pulmonary artery hypertension and reversal of shunt can also occur in some patients in later age, which is dependent but not only on the size of the defect³.

Acute Right to left shunt in patients with ASD or Patent Foramen Ovale (PFO) has been explained in cases of pericardial effusion/ tamponade, ARDS, multiple pulmonary emboli^{5, 6}. It was reported with a large mediastinal hematoma that compresses

the right ventricle⁷. Sometimes hypoxia and right to left shunt in ASD in absence of pulmonary artery hypertension has also been reported in patients due to well developed eustachian valve directing the venous blood to left atrium⁸.

Case Report:

A 25 year old otherwise healthy adult presented in the emergency department with sudden onset of shortness of breath and pedal edema which was gradually increasing for a week.

When examined at the time of presentation, he was in NYHA (New York Heart Association) class IV. He was tachypneic with rate of 30 per breaths per minute. He was cyanosed with saturation ranging from 63% to 70% and blood pressure of 100/60 mmHg. The left hemi thorax was elevated. The patient had pedal edema and Jugular venous pressure was raised.

He had palpable liver 3 fingers below the costal margin. The patient also had ascitis.

ECG showed sinus rhythm with heart rate of 116 per minute with incomplete right bundle branch block. It also showed P pulmonale, right axis deviation and biventricular hypertrophy. (Fig 1)

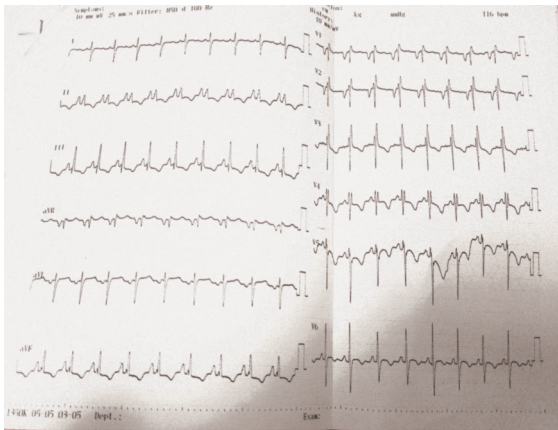


Fig 1: ECG showing sinus tachycardia with rate of 116/minute. P pulmonale, incomplete right bundle branch block and biventricular hypertrophy is also seen.

Transthoracic echocardiogram showed a large extra cardiac mass (6.9x 3.9 cm) compressing the RV in both systole and diastole along with a septum secundum atrial septal defect 3 cm in size. There was no pericardial effusion or any valvar abnormality. Left ventricular ejection fraction was 65%. (Fig – 2). CT scan showed a cystic cavity compressing the right ventricle also with elevated left hemi thorax (Fig 3).

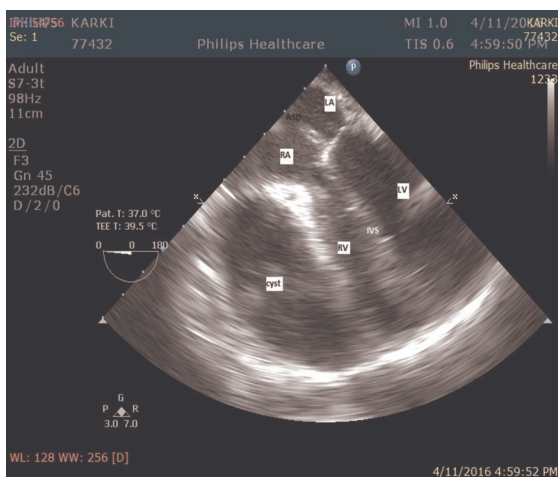


Fig 2: Echocardiogram showing Cyst compressing the Right Ventricle RA- Right atrium , RV- Right Ventricle , LA – Left Atrium , LV – Left Ventricle, ASD – Atrial Septal Defect, IVS- Inter Ventricular septum.



Fig 3: CT scan showing cyst compressing the RV and elevation of corresponding left thoracic cavity.

Patient was taken to operation theatre on the following day. Transesophageal done during surgery confirmed these findings. Excision of the pericardial cyst and closure of atrial septal defect with pericardial patch was done. The cyst was large (7X 4 cm) and showed thick wall with hemorrhage. The pericardium on the anterior and right lateral surface was thickened but there was no involvement of cardiac chambers. The patient recovered uneventfully and was discharged on the fifth post operative day.

Comment:

In this case, the patient did not give any history of shortness of breath, syncope, edema or palpitation before this particular episode. He also did not give any history of trauma. The left thoracic cavity was remodeled on clinical examination and also in CT scan resulting from the long standing pressure effect by the cyst on the thoracic cavity. But production of acute symptoms was due spontaneous hemorrhage into the cyst cavity causing pressure effect on the right ventricle resulting in acute right ventricular failure and acute reversal of shunt through the atrial septal defect.

Conflict of interest

The authors do not have any conflict of interest including financial in publication of this article.

References:

- 1 Kar SK, Ganguly T, Dasgupta S, et.al. A Review of Historical Perspective and Current Concept of Diagnosis and Management. *Interv Cardiol J* 2015, 1:1.
2. Temizkan V, Onan B, Inan K, et.al. Hemorrhage Into a Pericardial Cyst and Associated Right Ventricular Compression After Blunt Chest Trauma. *Ann Thorac Surg.* 2010;89:1292–5. <https://doi.org/10.1016/j.athoracsur.2009.09.018>
3. Kuijpers JM , Mulder BJM , Bouma BJ. Secundum atrial septal defect in adults: a practical review and recent developments. *Neth Heart J.* 2015; 23:205–211. <https://doi.org/10.1007/s12471-015-0663-z>
4. Ilhan E, Altin F, Ugur O, et al .An unusual presentation of pericardial cyst: Recurrent syncope in a young patient. *Cardiology Journal.* 2012; 19: (2): 188-91 <https://doi.org/10.5603/CJ.2012.0032>
5. Marples IL, Heap MJ, Suvarna SK et.al. Acute right-to-left inter-atrial shunt; an important cause of profound hypoxia. *British Journal of Anaesthesia* 2000; 85 (6): 921- 5. <https://doi.org/10.1093/bja/85.6.921>
6. Solar M, Fridrich J, Ceral J, Borovec M . Acute hypoxia due to right to left blood shunting in a patient with atrial septal defect. *Resuscitation.*2007; 74(2):382-385. <https://doi.org/10.1016/j.resuscitation.2007.01.003>
7. Kim EK, Lee SC, Park SB, et al. A Huge Mediastinal Organizing Hematoma Causing Reversal of Atrial Septal Defect Shunt Flow. *Korean Circ J.* 2011 Feb; 41(2): 97–100. <https://doi.org/10.4070/kcj.2011.41.2.97>
8. Melao F, Cruz C, Noya R et.al. Hypoxia and Cyanosis due to Unusual Right-to-Left Shunt in a Patient with an Atrial Septal Defect. *J Cardiovasc Dis Diagn* 2015, 3:4. <https://doi.org/10.4172/2329-9517.1000209>