DOI:10.24041/ejmr2018.65

A CASE STUDY OF PERICARDIAL CYST LEADING TO MULTIFOCAL ATRIAL TACHYCARDIA

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Received on : 05-06-2018
Accpected on : 12-06-2018

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ABSTRACT

This case discusses a patient who presented with symptoms of dyspnea and cough. Prior to being seen and admitted, the patient was seen multiple times over a one month period with complaints of intermittent chest pain, most notable in the retrosternal region, and frequent heart palpitations. Cardiac monitoring of the patient revealed multifocal atrial tachycardia over multiple ECG, the cause of which was later revealed to be a pericardial cyst located in the right atrium on CT scan and transesophageal echocardiogram.

KEYWORDS: Pericardial cyst, Percardium, Echocardiography, CT scan, Atrial tachycardia

INTRODUCTION

Pericardial cysts are rare, benign congenital structural abnormalities of the pericardium that tend to be asymptomatic incidental findings on chest radiography (1). They occur at an incidence rate of 1 per 100,000, and are found at an equal rate in males and females in the third and fourth decade of life (2). These tumors must be differentiated from other tumors in the pericardium, usually by CT scan, MRI and Echocardiography (2). Histologically, pericardial cysts are characterized as simple structures with a thin-wall that is usually closely associated with the pericardium and the diaphragm (3) and most frequently located in the right costophrenic angle (1). Although commonly asymptomatic, about a quarter of the patients develop non-specific symptoms, including chest pain, dyspnea and cough (4). The most common cardiac rate dysfunction is atrial fibrillation with six reported cases dating from 1988-2010 (5). However, up to the date of writing this paper, there were no journal articles or case reports found with supportive evidence of a pericardial cyst leading to multifocal atrial tachycardia.

CASE REPORT

A 52 year old Caucasian female with no known history of cardiac disease and a previous history of a positive PPD and TB exposure, treated for 3 months, presented to the hospital with a one month history of intermittent chest discomfort in the retrosternal region and palpitations. During this time, the patient reported a persistent cough along with exertional dyspnea, as well as dyspnea with lying flat and at rest alone.

Initial work-up showed an afebrile; tachycardic patient with a heart rate of approximately 100 bpm and a blood pressure in the 100's/60's, average respiration rate of 18 and oxygen saturation between 93 and 96. Laboratory studies demonstrated a slightly elevated cardiac troponin level of 0.080 and a BNP of 212. The patient's CBC and renal function were all within normal limits. Multiple ECG performed on admission showed sinus rhythm with frequent premature atrial contractions, paroxysmal atrial tachycardia, and multifocal atrial tachycardia.

A chest x-ray on admission showed a right-sided retrocardic parasternal mass. A PA and lateral chest x-ray was done to further identify the lesion which revealed a rounded density in the right cardiophrenic angle corresponding to a benign pericardial cyst. Further evaluation was performed with a CT scan which showed a right pericardial cyst, 3.0 cm x 1.5 cm of benign fluid density. Minimal scarring was observed in the lingular segment of the left upper lobe. Additionally, an incidental finding of cholelithiasis was observed.

Cardiac catherization was performed and was normal. Further evaluation with a transesophageal echocardiogram, (TEE) was recommended and this revealed a cystic structure that is contiguous with the upper limit of the right atrium and measured approximately 2.5 cm. No echogenic masses or Doppler flow were noted within the cyst. The location of the cyst had a high correlation with "non-responsive atrial fibrillation-flutter" in a patient with no other predisposing factor (5).

The patient was started on Multag 400mg BID to control her atrial tachyarrhythmias. A cardiovascular and thoracic surgeon was also consulted.

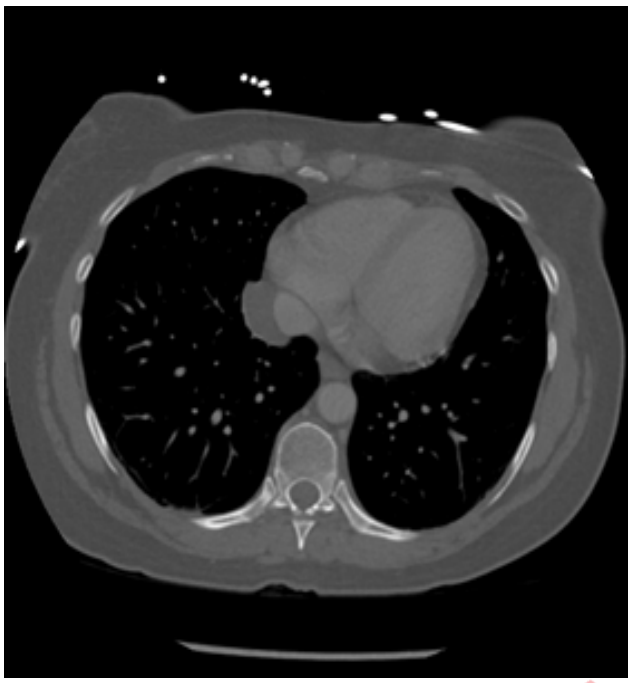

Fig 1: Ct Scan Showing A 3.0 Cm X 1.5 Cm Benign Fluid Density Right Pericardial Cyst

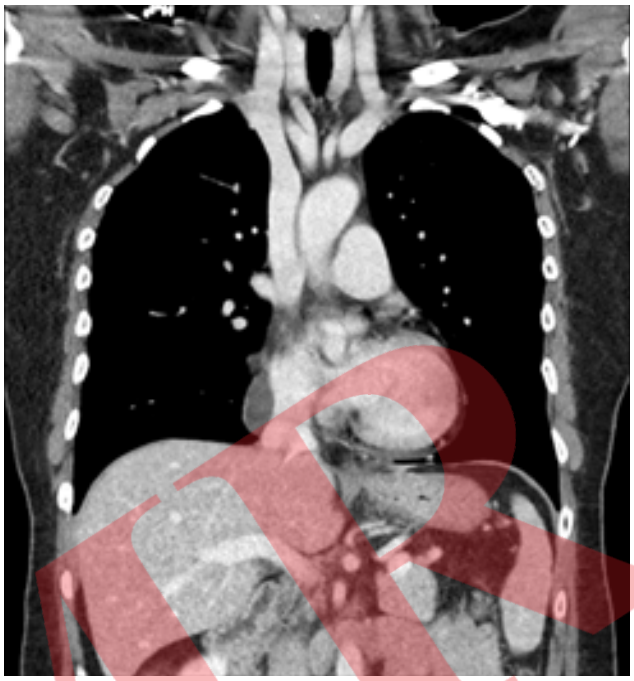

Fig 2: Rounded Density In The Right Cardiophrenic Angle Corresponding To A Benign Pericardial Cyst

Fig 3: ECG With Normal Sinus Rhythm And Showing Frequent Premature Atrial Contractions And Multifocal Atrial Tachycardia

DISCUSSION

Pericardial cysts are normally rare, incidental findings with a prevalence of 1:100,000 and account for 7 % of the total number of mediastinal masses (5). These cysts are usually congenital, but can occur in patients with a previous history of cardiac surgery (6). They are caused by "an incomplete coalescence of fetal lacunae *forming the* pericardium." (7) Typically, they are lined by simple squamous cells of endothelium or mesothelium, uniloculara thin walled cavities containing a clear serous fluid and are non-communicating with the pericardial space, frequently originating near the pericardial coelom (6-7).

The typical presentation of a pericardial cyst on CT and MRI is one of a "non-enhanced, well-defined mass adjacent to the pericardium." (8) They are asymptomatic benign lesions that are normally incidental findings on patient work-up. The lesion is classically first noted as a mediastinal mass on plain chest radiography and diagnosis is confirmed using MRI. TEE can be performed in order to determine the exact location and differentiation of the cyst (7). The majority of these lesions tend to be found in the cardiophrenic angle, 51-70% on the right, 22-38% on the left or rarely in the anterior or posterior superior mediastinum (9).

The majority of patients with this kind of lesion are usually asymptomatic; however, those that are symptomatic tend to present with generalized fatigue, dyspnea, chest pain or discomfort and a persistent cough [5]. Treatment of an asymptomatic pericardial cyst tends to be conservative management (10). Thoracotomy should be considered in the face of persistent symptomatology, recurrence or in cases refractory to treatment. The cyst can be removed with endoscopic excision, echocardiographically guided percutaneous aspiration and/or video-assisted thoracoscopic surgery (9).

CONCLUSION

The occurrence of a patient presenting with multifocal atrial tachycardia due to a pericardial cyst is a very rare find, and tends to be due to the proximity of the cyst compressing on other atrial structures such as the SA/AV nodes; this leads to symptomatic presentations (5). More serious complications of pericardial cysts include cardiac tamponade, right ventricular outflow obstruction, mitral valve prolapse, congestive heart failure, atrial fibrillation, pericarditis, rupture of the cyst and sudden death (9-7).

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How to cite this article : Lewis J.P, Rihawi A, Lewis J.A, A Case Study Of Pericardial Cyst Leading To Multifocal Atrial Tachycardia. EJMR2018;5(1):71-73.