

Strange Image in the Left Atrium?. Maybe Not

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Abstract

Paracardial cystic lesions (PCLs) are defined as cystic structures adjacent to the heart. PCLs are rare benign lesions and can occur anywhere around the heart. These cysts comprise 12 to 30% of all primary mediastinal masses. A bronchogenic cyst is derived from the primitive foregut and is the most common comprising 16.3 to 44% of all PCLs. There are no differences between sexes and it can appear at any age, although it is more common in the fourth and fifth decades of life. Most affected patients are symptomatic and the most common symptoms are cough and chest pain, caused by compression of adjacent organs. Chest radiography, computed tomography and magnetic resonance imaging are the investigations of choice for the diagnosis. Transthoracic echocardiography (TTE) has specific limitations; in fact, the diagnosis of PCLs may be missed in about a third of cases.

Here we discuss a patient with echocardiographic findings of a membranous structure apparently dividing the left atrium. The diagnosis of bronchogenic cyst was made in a hospital with limited resources. We also give a brief literature review on the differential diagnosis of mediastinal bronchogenic cysts.

Keywords: Cyst; Bronchogenic Cyst; Echocardiography; Cor Triatriatum

Introduction

Paracardial cystic lesions (PCLs) are defined as the cystic structures adjacent to the heart. The PCLs are rare, benign lesions and may occur in any part surrounding the heart [1]. These cysts comprise 12 to 30% of all primary mediastinal masses [2]. They are generally asymptomatic and usually discovered incidentally on imaging investigation [2,3]. At present, echocardiography is a widely used imaging technique in clinical practice and it is inevitable to encounter the PCLs in the examination [4].

A bronchogenic cyst (BC) is derived from the primitive foregut and is the most common, comprising 16,3 to 44% of all PCLs [2,3,5]. There are no differences between sexes, and it may appear at any age, although it is most common in the fourth and fifth decades of life [2,3,5]. The majority of affected patients are symptomatic, and the most common symptoms are coughing and chest pain, which is caused by compression of adjacent organs [6]. Transthoracic echocardiography (TTE) has specific limitations and in about one-third of the cases, the diagnosis of BC is missed on echocardiography [5].

Here we discuss a patient with echocardiographic findings of a membranous structure apparently dividing the left atrium. The diagnosis of bronchogenic cyst was made in a hospital with limited resources. We also give a brief literature review on the differential diagnosis of mediastinal bronchogenic cysts.

Case Report

A 39-year-old male patient had undergone treatment for 2 years because of pulmonary tuberculosis (TB). Subsequently, he experienced recurrence with positive Genexpert sputum analysis requiring anti-TB drugs and physiotherapy. He was also referred for cardiology review following a two-month history of palpitations, shortness of breath on exertion and chest pain.

Physical examination revealed pale mucosa and poor nutritional status. His heart rate was 85 bpm, blood pressure 120-80 mmHg, and body temperature 36°C. The respiratory rate was 22/min with decreased chest expansion bilaterally and crackling rales on the left side of the chest. The remaining physical examination was unremarkable. Full blood count showed Hb 7.8 g/dl, WBC 20,000 u/l, PLT 200,000 u/l, VS 112 mm/h. Chest X-ray showed features of previous pulmonary tuberculosis. ECG showed sinus rhythm and s1q3 r-S morphology pattern in V1-V5. TTE showed a membranous structure dividing the left atrium in the parasternal long-axis view. Both sides had the same echo density, indicating fluid density (Figure 1A blue arrow). The differential diagnosis included cor triatriatum, left atrial dissection, cardiac tumour or external mass. Colour Doppler assessment showed no shunt across the membrane. The features were more suggestive of an extra-cardiac homogeneous mass located on the cranial aspect of the left atrium and compressing on it (Figure 1B and 1C). In addition, color Doppler shows that the blood flow in the pulmonary vein that drains into the left atrium was pinched and thus flowed into the left atrium along the interatrial septum aspect (Figure 1D). A diagnosis of bronchogenic cyst was considered but not confirmed due to unavailable CT-scan facilities.

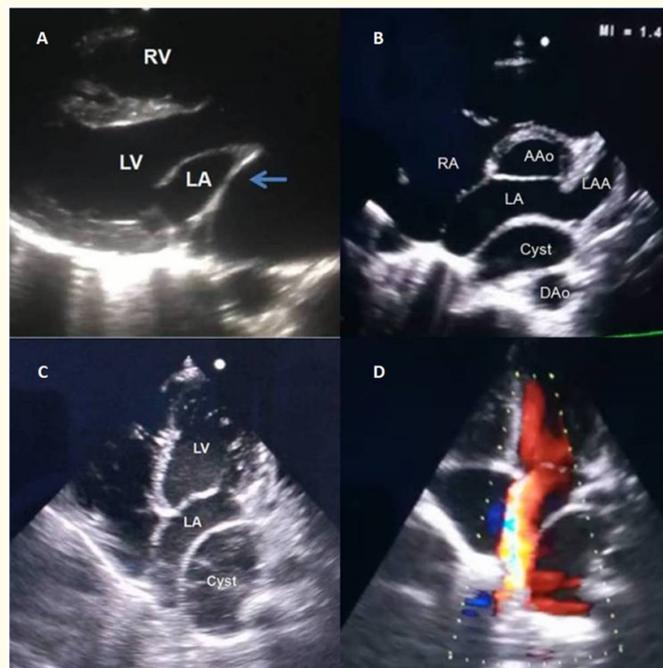


Figure 1: Transthoracic echocardiogram A - Parasternal long axis view showing a membranous structure dividing the left atrium (blue arrow). B - Parasternal short axis view showing a cystic image behind the left atrium. C - Apical four chamber view showing an extracardiac cystic mass D - Color Doppler suggestive of compression of the right pulmonary vein. AAo-Ascending aorta; DAA- Descending aorta; LA- Left atrium, LAA Left atrial appendage; LV-Left ventricle; RA-Right atrium RV-Right ventricle.

Discussion

A bronchogenic cyst is derived from the primitive foregut and is the most common PCLs [2,3,5]. There are no differences between sexes, and it may appear at any age, although it is most common in the fourth and fifth decades of life [2,3,5]. The majority of affected patients are symptomatic, and the most common symptoms are coughing and chest pain, which is caused by compression of adjacent organs as observed in our patient [6].

Conventional transthoracic echocardiography (TTE) might be the first imaging modality to identify mediastinal masses, especially in patients presenting with chest pain and dyspnoea [7]. The differential diagnosis for a mediastinal mass on echocardiography includes mediastinal malignant tumor, thoracic aortic aneurysm, para-spinal abscess [4], pericardial cysts [8], hiatus hernia [9] and cor triatriatum.

In our case, the presence of a membranous structure that apparently divided the left atrium made us initially think of cor triatriatum sinistrum, which is characterized by a significantly enlarged left atrium on ultrasound, with a hyperechoic central annular fiber membrane dividing the left atrium into a true chamber and an accessory chamber and a membrane that may be complete or contain one or more fenestrations of varying size. The mediastinal cyst in our case had a thicker membrane on ultrasound without fenestration to the left atrium and blood flow through the membrane, which clearly differentiated it from cor triatriatum.

The most common ultrasonographic features of mediastinal malignant tumors are multiple round or oval lesions fused into an irregular mass, with heterogeneous echoes and cystic degeneration, and blood flow signals on color Doppler for some lesions. Thoracic aortic aneurysms show a circular or tubular anechoic area on two-dimensional ultrasound, filled with blood flow signal on color Doppler and visible blood flow signal on spectral Doppler [4]. These findings were not observed in our patient, thus excluding these diagnoses.

Pericardial cysts usually occur in the middle mediastinum and appear as well-defined echoless or hypoechoic areas with the thin wall on sonography, with connection to the pericardium but no openings to the pericardial cavity [8]. Furthermore, pericardial cysts are typically located at the right or left cardiophrenic angle and rarely in other areas.

Hiatus hernia constitutes a form of posterior mediastinal mass that can encroach on the posterior aspects of the heart and should be distinguished from other left atrial or mediastinal space-occupying lesions. The “swirling effect” is useful in identifying Hiatus hernia [9].

CT and MRI are widely used in the diagnosis of mediastinal masses because their tomographic images can demonstrate the exact location of the lesions and their relationship with adjacent structures [10-12]. In our case, the lack of these facilities made it difficult to confirm the diagnosis of a bronchogenic cyst. On the other hand despite the value of various noninvasive diagnostic studies, definitive diagnosis is established only by surgical excision and tissue biopsy [3].

Limitation of the Study

The main limitation is the lack of a definitive diagnosis of the lesion.

Conclusion

In conclusion, the case described reflects the difficulty in diagnosing relatively rare pathologies in hospitals with limited resources. Therefore, clinical acumen with a high degree of suspicion and reliance on ECG, chest X-Ray and TTE remains of paramount importance in daily clinical practice.

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