



Echo Lucent Space Occupying Lesion on Echocardiogram

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Authors' contributions

This work was carried out in collaboration between all authors.

Case Study

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ABSTRACT

Left atrial space occupying lesions pose diagnostic challenge on echocardiography. We report a 79-year-old man with history of pheochromocytoma with left adrenal mass presented with heart failure symptoms after adrenalectomy. Echocardiogram revealed a large echo lucent structure (6.9 x5.9cm) compressing the posterior wall of the left atrium. Further investigation with computer tomography and barium swallow confirmed the diagnosis of hiatal hernia. In this report we explain the differential diagnosis and simple steps to assist the diagnosis of left atrial space occupying lesions noninvasively.

Keywords: *Space occupying lesions; pheochromocytoma; myxoma; hiatal hernia; coronary sinus; pericardial cyst.*

1. CASE REPORT

A 79-year-old Caucasian man with history of atrial fibrillation, hypertension, and pheochromocytoma with left adrenal mass status post recent adrenalectomy presented with complaints of lower extremity swelling, abdominal fullness and dyspnea with exertion. He

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denied chest pain, palpitations, sweating or shortness of breath on lying down flat. He was afebrile with blood pressure of 126/74mmHg, heart rate of 95 beats per minute and respiratory rate of 16/minute. Physical examination revealed signs of mild fluid overload with jugular venous pulsation at 4 centimeters above the right clavicle, crackles on auscultation of the bilateral lung bases and scant pretibial edema. His heart sounds were normal with no murmurs or clicks heard. His complete blood count, basic metabolic profile and cardiac enzymes were within normal limits. Brain natriuretic peptide (BNP) was increased at 1040ng/ml.

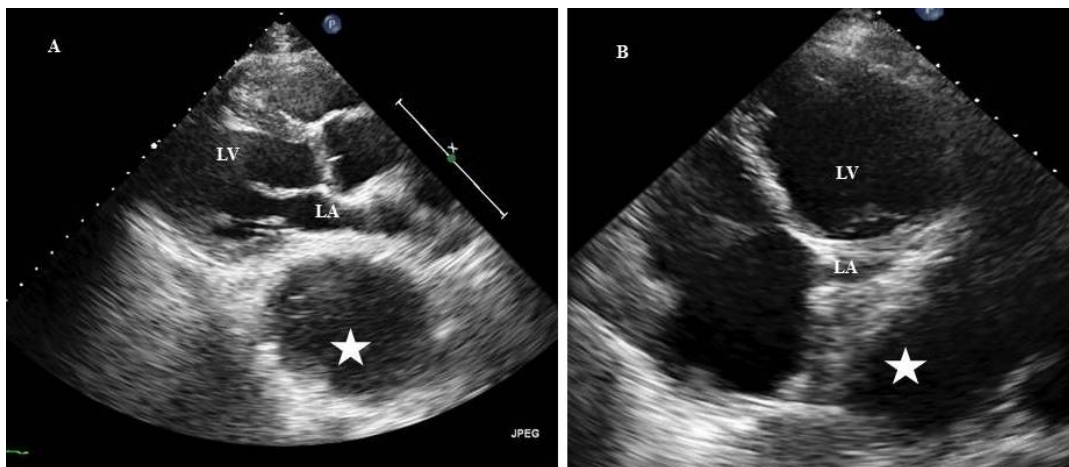


Fig. 1. Transthoracic echocardiogram parasternal long axis (A) and apical four chamber (B) views showing echo lucent structure (*) compressing the left atrium (LA). [Left ventricle (LV)]

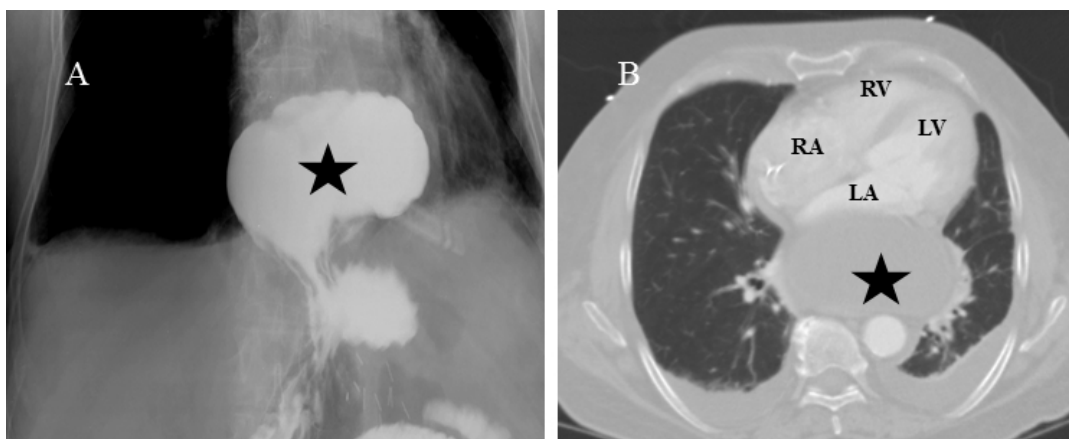


Fig. 2. Intrathoracic extension of the stomach (*) and compression of the heart by hiatal hernia is shown on the barium swallow study (A) and computer tomography (B). [RA-right atrium, RV-right ventricle, LV-left ventricle, LA-left atrium]

Chest radiograph showed cardiomegaly and bilateral pleural effusions. He was started on intravenous diuretics and a 2D echocardiogram (ECHO) was ordered. ECHO revealed an ejection fraction of 45%. A large echo lucent structure (6.9x5.9cm) was noted posterior to the

left atrium with external compression as shown in Figs. 1A and 1B. No pericardial effusion was present.

On comparison with ECHO done 2 years ago, there was no similar echo lucent structure seen posterior to the left atrium. Differential diagnosis based on the ECHO findings included malignancy given history of pheochromocytoma, descending aortic aneurysm, dilatation of the coronary sinus, mitral ring abscess, myxoma, pericardial cyst and hiatal hernia. Computer tomography (CT) of the chest/abdomen/pelvis was done to further delineate the mass. CT scan as seen in Fig. 2B showed massive dilatation of the stomach with a large hiatal hernia with intra-thoracic extension and external compression of the left atrium. Barium swallow evaluation as shown in Fig. 2A confirmed the intra-thoracic extension of the hiatal hernia.

2. DISCUSSION

Hiatal hernia represents part of the stomach/abdominal contents that migrate abnormally into the thorax usually through the esophageal hiatus of the diaphragm. Although often asymptomatic, hiatal hernia may present with clinical symptoms in the form of epigastric pain and concomitant gastro esophageal reflux. It can lead to post-prandial syncope [1] and angina-like chest pain, with electrocardiogram (EKG) changes that can cause misdiagnosis of myocardial ischemia [2]. Hiatal hernia can mimic as an echo lucent left atrial space occupying structure on echocardiogram. Although the diagnosis is made with other imaging studies, adequate information can be derived using simple additional maneuvers while obtaining images through echocardiogram. Ingestion of carbonated beverage would lead to visualization of swirling echo densities which will aid in the diagnosis of hiatal hernia [3]. In suspected cases of coronary sinus dilatation due to persistent left superior venacava, injection of agitated saline through left cubital vein shall lead to immediate appearance of bubbles in the coronary sinus. Color flow Doppler will assist to diagnose vascular nature of the structure and also helps to diagnose aortic aneurysm or dissection. Cardiac complications due to hiatal hernia depend on the extent of the compression leading to dyspnea, heart failure, rarely formation of gastro-pericardial fistula, pericardial effusion and arrhythmia [4,5].

Echocardiography is an excellent initial diagnostic tool to evaluate and diagnose cardiac masses. Evaluation of intra-cardiac masses depends on the ability to distinguish normal from abnormal findings. By performing simple additional steps such as mentioned above we can avoid expensive diagnostic tests and diagnose most of the space occupying lesions adjacent to the left atrium noninvasively. Cardiologists and sonographers should be aware of echocardiographic findings and simple steps to differentiate the left atrial space occupying lesions.

3. CONCLUSION

This case study highlights the differential diagnosis for a space occupying lesion seen posterior to the left atrium on a transthoracic echocardiogram. The study also suggests the use of simple diagnostic maneuvers such as ingestion of carbonated beverages while obtaining echocardiogram images to differentiate a hiatal hernia from another space occupying lesion posterior to the left atrium, which could help avoid need for more expensive imaging tests.

CONSENT

Not applicable.

ETHICAL APPROVAL

Not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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