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Case Report

Esophageal achalasia compressing the left atrium and mimicking an extracardiac tumor on the transthoracic echocardiography: A case report ☆

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ABSTRACT

Achalasia is an uncommon disorder affecting esophageal motility. Occasionally, the appearance of a dilated esophagus in achalasia may resemble an extracardiac tumor when observed through transthoracic echocardiography. Left atrial compression due to extensive esophageal dilation is also rare, potentially leading to hemodynamic compromise. Here, we present a rare case involving left atrial compression caused by esophageal dilation in achalasia, with echocardiographic findings mimicking those of an extracardiac tumor.

Introduction

Achalasia, a rare disorder impacting esophageal function, is characterized by loss of peristalsis and inadequate lower esophageal sphincter relaxation [1]. The annual incidence and prevalence of achalasia range from 1.8 to 12.6 and 0.03 to 1.63 per 100,000 individuals, respectively [1,2]. Patients commonly exhibit progressive difficulty swallowing solids and liquids, along with symptoms like heartburn, chest pain, regurgitation, and varying degrees of weight loss or nutritional deficiencies [1]. Left atrial compression due to massive esophageal dilatation is an exceedingly uncommon manifestation, potentially leading to hemodynamic compromise, including acute heart failure [3–8].

Case report

A 65-year-old man presented at the outpatient clinic complaining of worsening dysphagia, regurgitation, and weight

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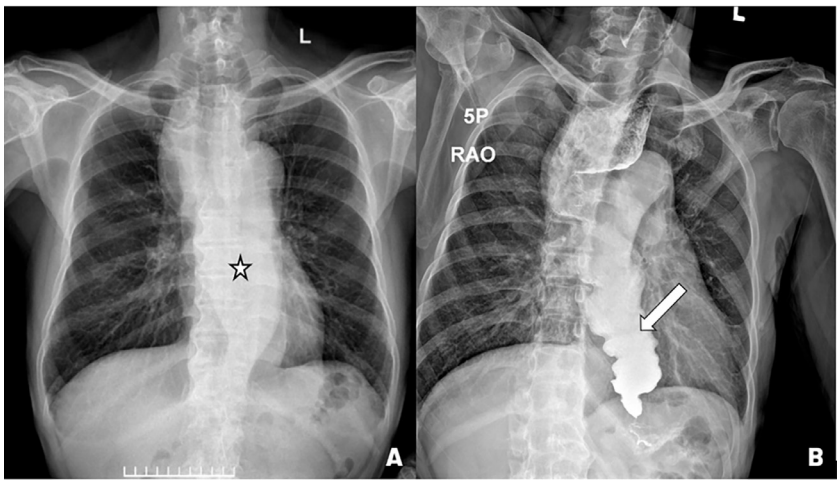

Fig. 1 – The frontal chest X-ray (A) showed a convex opacity (asterisk) overlapping the right mediastinum with an air-fluid level and bird beak sign (arrow) on the barium esophagogram (B).

loss. One year ago, he began experiencing sporadic episodes of dysphagia for both liquids and solids, which occurred intermittently and infrequently. These symptoms varied daily, accompanied by regurgitation and substernal cramps after meals. Two months before the examination, the symptoms of dysphagia, regurgitation, and substernal cramps during meals worsened, becoming more severe and frequent. These symptoms were coupled with substantial weight loss, amounting to 8 kilograms within 2 months, constituting 10% of the individual's body weight. The patient denied experiencing exertional angina, dyspnea, abdominal discomfort, or diarrhea. Furthermore, there was no history of medication use, diabetes, or hypertension in his medical records. He had a history of smoking equivalent to twenty-five pack-years. Physical examination yielded no significant findings, and the electrocardiogram showed normal results. The frontal chest X-ray showed a convex opacity overlapping the right mediastinum with an air-fluid level without signs of cardiomegaly or abnormalities in lung tissue (Fig. 1A). The barium esophagogram revealed esophageal dilation with smooth, symmetric, tapered narrowing of the distal esophagus, extending to the gastroesophageal junction. This appearance resembled a "bird beak sign" or "rat tail sign" on a barium esophagogram, indicative of achalasia disorder (Fig. 1B).

Transthoracic echocardiography was performed to rule out other potential cardiovascular causes. In the parasternal long-axis view, a noncardiac mass measuring 60 × 30 mm, characterized by a mixed-echo density, rounded shape, and smooth border, was identified between the posterior wall of the left atrium and the descending aorta (Fig. 2A). This mass displayed asynchronous movement with the atrium. As the patients ingested food, mass density alterations were noticed, accompanied by the movement of the internal components indicative of food. In the parasternal short-axis view, the mass appeared behind the left atrium, partially compressing into its posterior wall (Figs. 2B and C). In the apical 4-chamber view, the mass also compressed into the left atrium on its lateral surface (Fig. 2D). Despite these findings, the mass did not cause significant hemodynamic compromise, as evidenced by the normal left ventricular end-diastolic pressure. There was no evidence of right ventricular dilation or dysfunction, pulmonary vein stenosis, or hemodynamic abnormalities across the mitral or tricuspid valves.

A contrast chest CT scan revealed significant esophageal dilation with smooth narrowing of the distal esophagus but without thickening of the esophageal wall, indicative of primary achalasia. No evidence of other mediastinal masses or complications related to achalasia, such as aspiration pneumonia, candida esophagitis, or secondary esophageal cancer, was observed (Fig. 3).

Discussion

Achalasia is a rare esophageal motility disorder characterized by loss of peristalsis and insufficient lower esophageal sphincter relaxation [1]. It is characterized by progressive ganglion cell degeneration in the esophageal myenteric plexus [9]. This condition manifests with symptoms such as progressive dysphagia to both solids and liquids, heartburn, chest pain, regurgitation, and varying degrees of weight loss or nutritional deficiencies [1].

Any abnormal structure adjacent to the left atrium has the potential to compress it, leading to extrinsic left atrial compression, which is uncommon but can be caused by various mediastinal structures like bronchogenic cysts, carcinoma, lymphoma, thymoma, aortic aneurysm, and diaphragmatic hernia [10]. Left atrial compression due to massive esophageal dilatation is an exceptionally rare presentation, which may eventually result in hemodynamic compromise, including acute heart failure [3–8]. Functional tamponade, resulting from restricted left atrial inflow and direct impairment of ventricular filling, can lead to decreased cardiac output and pulmonary congestion [8].

Transthoracic echocardiography is the preferred diagnostic tool for evaluating extracardiac masses compressing the left atrium, providing information about the mass's characteris-

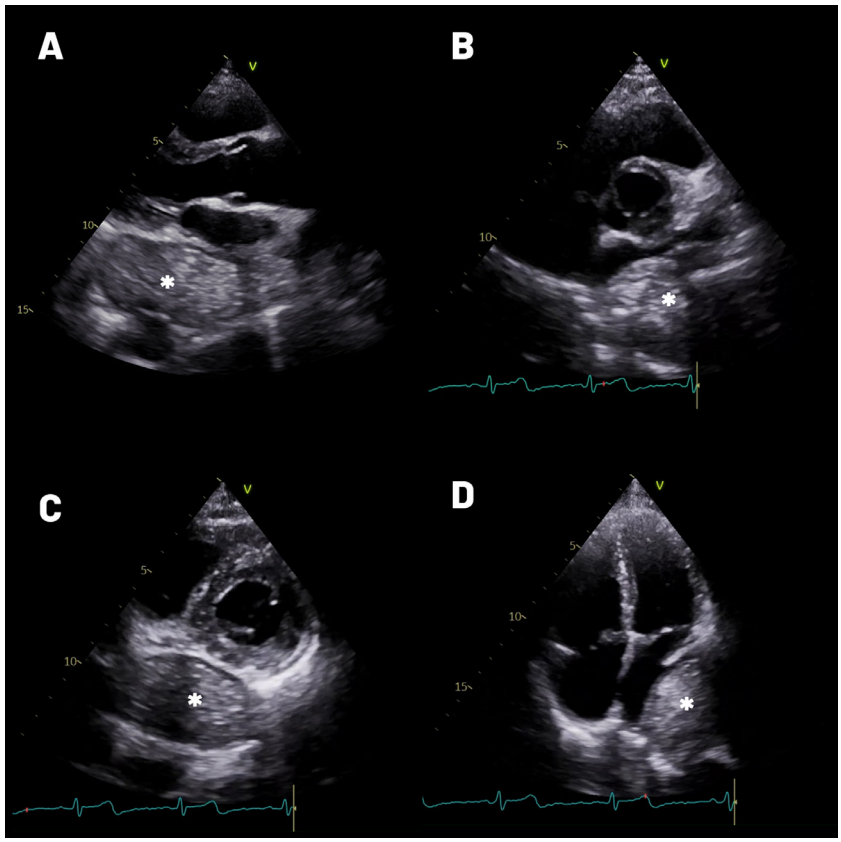

Fig. 2 – An extracardiac mixed-echo mass (asterisk), located between the posterior wall of the left atrium and the aorta on the parasternal long-axis view (A), on the parasternal short-axis view (B, C), and compressed the left atrium on the apical four-chamber view (D).

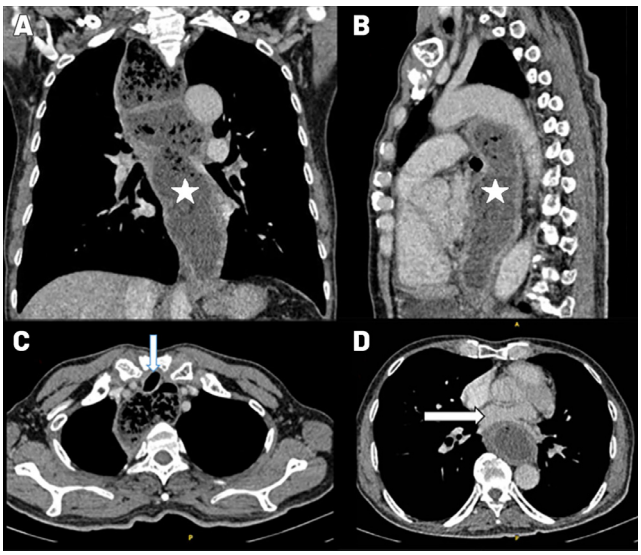

Fig. 3 – (A and B) Coronal and sagittal CT postcontrast images revealing a dilatated esophagus (asterisk) containing food residue. Axial images showed compressed trachea (arrow in C) and left atrium (arrow in D), which resulted from a dilatated esophagus filled with food residue.

tics and hemodynamic impact. Occasionally, a dilated esophagus may be visualized on transthoracic echocardiography between the posterior wall of the left atrium and the descending aorta, appearing as a mixed-echo mass with a rounded and smooth border, moving asynchronously with the left atrium and compressing it. Performing echocardiography while the patient ingests food can help detect fluctuations in mass density, aiding in distinguishing between the esophagus and other anatomical structures. However, before confirming that the mass observed on transthoracic echocardiography is indeed the dilated esophagus, it is imperative to conduct a chest CT scan with contrast to rule out the presence of any other mediastinal masses.

Conclusion

A large esophagus compressing cardiac structures is one of the uncommon presentations. On transthoracic echocardiography, a dilated esophagus in achalasia may appear as an extracardiac mass. Compression of the left atrium by the dilated esophagus can lead to hemodynamic consequences, potentially resulting in acute heart failure. However, to confirm the diagnosis definitively, it is typically advisable to conduct additional chest CT scans with contrast to comprehensively assess

thoracic structures and eliminate the possibility of other mediastinal masses.

Patient consent

I confirm that written, informed consent for publication of their case was obtained from the patient, allowing us to use the patient's photographs and medical information in this article.

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