Unexpected complication of diaphragmatic hernia: Compression of the heart by liver

A 51-year-old female patient was admitted to our hospital with complaints of shortness of breath and chest pain since 3 months. Her history revealed dual mesh repair for a large diaphragmatic hernia defect because of the compression of the right heart chambers by liver hernia 11 years ago and hypertension. Physical examination revealed elevated jugular venous pressure, hepatomegaly, and mild lower-extremity edema. Electrocardiography revealed sinus rhythm with negative T waves in DIII and aVF derivations. Chest X-ray revealed an elevated right-sided hemidiaphragm (Fig. 1). Two-dimensional transthoracic echocardiography demonstrated hepatic compression of the right atrium and right ventricle (Fig. 2a and 2b, Video 1). Doppler flow pattern across the tricuspid valve gradient (maximum gradient: 34 mm Hg; mean gradient: 16 mm Hg) was also noted (Fig. 2c). Left ventricular ejection fraction was 60%. Chest computed tomography identified the mass as a large transdiaphragmatic herniation of the left liver lobe protruding through a defect and hepatic compression of the right atrium and right ventricle (Fig. 2d-2f). As a definitive treatment, we recommended dual mesh repair for the diaphragmatic hernia defect, but the patient refused to get operated.

In most cases, diaphragmatic eventration is asymptomatic, with incidental discovery on chest radiography or may present with dyspnea, chest infection, and gastrointestinal symptoms.

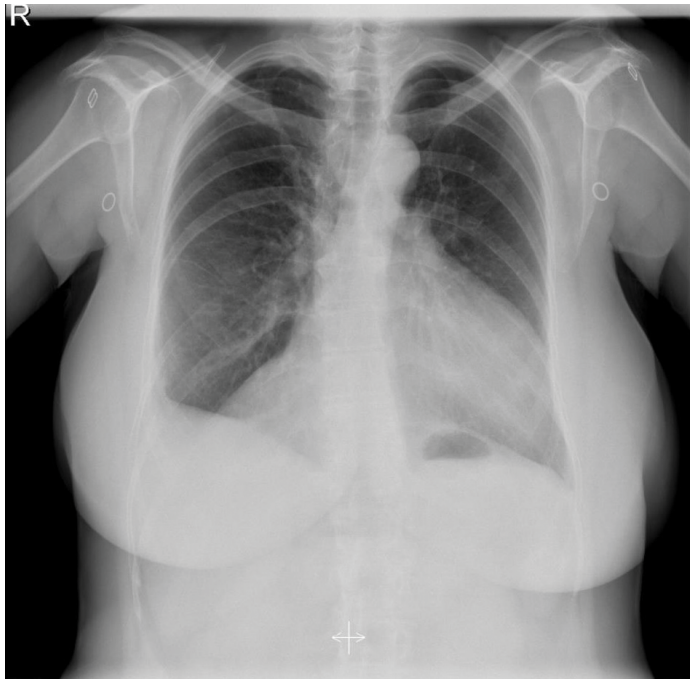

Figure 1. Chest radiography (anteroposterior) showing an elevated right-sided hemidiaphragm

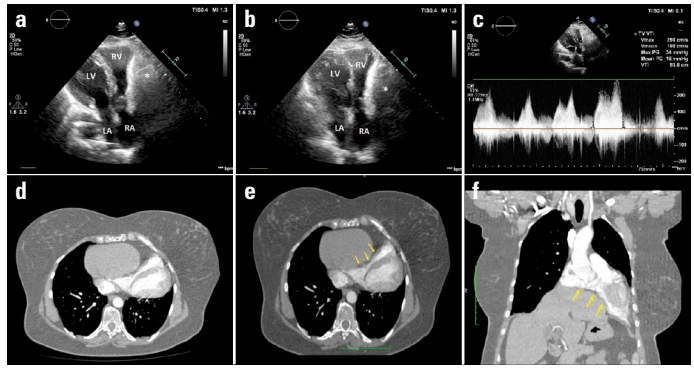

Figure 2. Two-dimensional transthoracic echocardiography showing hepatic compression of the right atrium and right ventricle (apical views of the four chambers) (a and b) and Doppler flow pattern showing the tricuspid valve gradient (c); Computed tomography of the chest showing the mass as a large transdiaphragmatic herniation of the left liver lobe protruding through a defect and hepatic compression of the right atrium and right ventricle from axial (d and e) and coronal (f) views

Cardiac compression is a rare presentation of diaphragmatic eventration and has been reported in a few cases in association with other pathological processes predisposing to compression. Right atrial compression with the obstruction of the systemic venous drainage is a very rare presentation of diaphragmatic eventration; however, significant hepatic compression of both the right atrium and right ventricle has not been previously reported.

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Video 1. Two-dimensional transthoracic echocardiography showing hepatic compression of the right atrium and right ventricle and Doppler flow pattern showing tricuspid valve gradient.

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Giant atrial septal aneurysm prolapsing into the right ventricle in an asymptomatic infant

A 10-month-old girl was referred to the pediatric cardiology clinic due to a cardiac murmur. On initial physical examination,

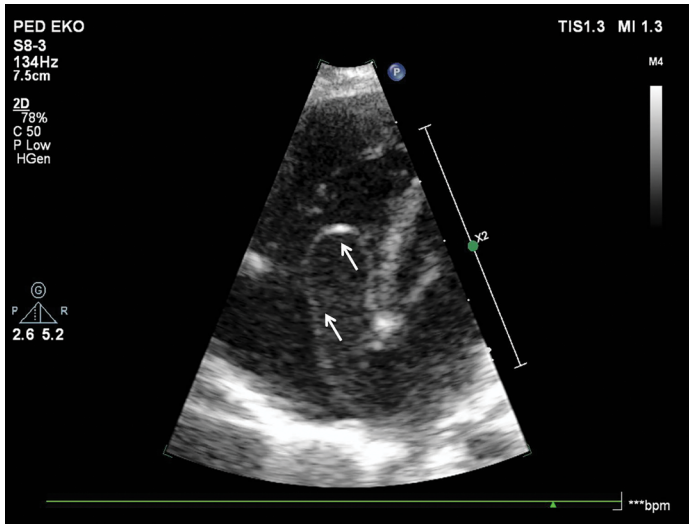

Figure 1. Transthoracic apical 4-chamber view. White arrows show the atrial septal aneurysm prolapsing from the tricuspid orifice into the right ventricle

her second heart sound was somewhat more widely split with inspiration, and a grade 1-2/6 systolic ejection murmur was heard at the pulmonic region. The echocardiogram revealed a very large fenestrated atrial septal aneurysm with marked mobility, prolapsing from the tricuspid orifice into the right ventricle (Fig. 1 and Video 1). Color-image echocardiography demonstrated a patent foramen ovale and a multi-fenestrated atrial septum. There was no enlargement of the right ventricle or the right atrium, and ventricular functions were all normal. Right ventricular systolic pressure was calculated to be 22 mm Hg. Follow-up at the clinic over 6 months with serial echocardiography and physical examinations yielded no sign of clinical or echocardiographical deterioration. Interatrial septal aneurysm remains a rare congenital cardiac malformation consisting of redundant atrial septal tissue that bulges into either the left or the right atrium. Echocardiography and autopsy series in the general population have revealed a prevalence of 1% to 2%. It can be diagnosed when the septum travels 10 mm or more into either one or both atria and has a base width of 15 mm or more. The clinical implications of this entity are not entirely clear, and it may be associated with other cardiac abnormalities, such as patent foramen ovale and atrial septal defects.

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Video 1. Two-dimensional transthoracic echocardiography revealing a giant interatrial septal aneurysm.

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