CLINICAL IMAGES

# Giant right atrium with severe pulmonary hypertension

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An 84-year-old woman with a history of atrial fibrillation presented with cough, lethargy and symptoms of progressive heart failure. She had not seen a physician for many years, despite persistent symptoms. Physical examination showed an elevated jugular venous pressure, a grade 2/6 holosystolic murmur at the left sternal border and apex, hepatomegaly and severe edema in her legs.

Chest radiography indicated marked cardiomegaly. A computed tomography scan with intravenous contrast showed marked enlargement of the right atrium, which almost filled the chest cavity (Figure 1A). An echocardiogram revealed massive enlargement of the right atrium, a normal-sized left atrium, mild dilatation of the right ventricle, and moderate mitral and severe tricuspid regurgitation (Figure 1B). Left ventricular size and function were normal. The right atrium measured 11 × 12 cm and had a calculated volume of 760 (normal 20–40) mL — representing one of the largest right atria described in an adult.[1] Systolic pulmonary artery pressure was 90 (normal < 40) mm Hg, consistent with severe pulmonary hypertension. The patient was discharged home with oxygen and diuretics, but she had a cardiac arrest four weeks later and died.

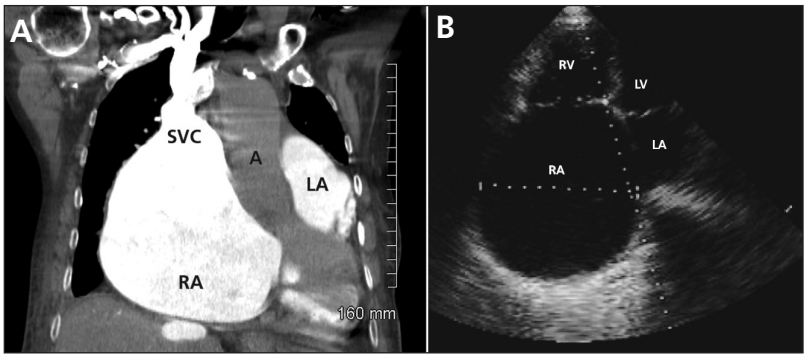


**Figure 1:** (A) Computed tomography scan of the chest with intravenous contrast in an 84-year-old woman showing marked dilatation of both atria and a prominent superior vena cava (SVC). (B) Echocardiogram (four-chamber apical view [enhanced for print]) showing massive enlargement of the right atrium (RA), a normal-sized left atrium (LA), which is compressed by the right atrium, and a noncoapting tricuspid valve caused by annular dilation. A = aorta, LV = left ventricle, RV = right ventricle.

Massive enlargement of the right atrium is usually associated with congenital heart disease in infants and children.[2,3] We found only two reports of a giant right atrium in adults.[1,4]

The most common causes of an enlarged right atrium in adults are chronic pulmonary disease, severe mitral valvular abnormalities with pulmonary hypertension, pulmonary emboli and tricuspid valvular stenosis.[1] Few studies have evaluated the velocity of dilatation of the right chambers in humans.[5] In a prospective study, Cioffi and colleagues found that right atrial size, systolic function and wall stress increase substantially in pulmonary hypertension, and activation of the Frank–Starling mechanism occurs in both right chambers.[6] Interestingly, our patient had only mild dilatation of the right ventricle, and we believe that severe tricuspid regurgitation most likely caused the disporportionate dilatation of the right atrium.

This article has been peer reviewed.

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