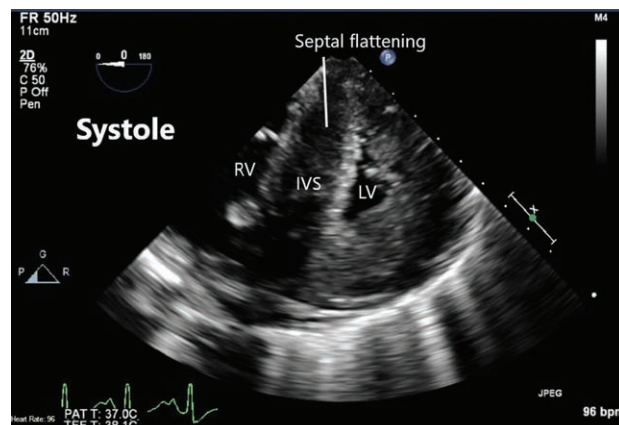
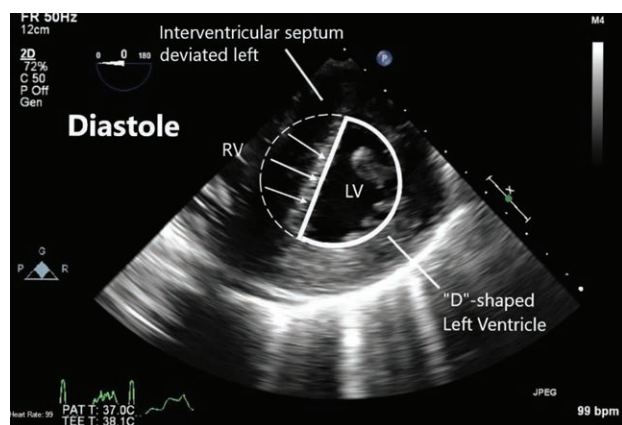


Right Ventricular Dysfunction and the “D”-shaped Left Ventricle

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Transesophageal echocardiography images were acquired from a 70-yr-old patient with pulmonary hypertension and heart failure. The *left image* depicts leftward deviation of the interventricular septum during diastole, a phenomenon suggestive of right ventricular (RV) volume overload. The *right image* portrays interventricular septum (IVS) flattening during systole, a finding characteristic of right ventricular pressure overload. Together, these transgastric midpapillary short-axis images capture the classic echocardiographic finding of a “D”-shaped left ventricle (LV) secondary to septal flattening in the setting of right ventricular dysfunction.

Since both ventricles share the interventricular septum and pericardium, a phenomenon known as ventricular interdependence exists where dysfunction of one ventricle impacts the function of the other. Normally, the interventricular septum is concave towards the left ventricle throughout the cardiac cycle, contributing to proper biventricular function. In right ventricular pressure or volume overload states, interventricular septum flattening can mechanically alter left ventricle geometry and impair left ventricle function.² Therefore, it is imperative that right ventricular dysfunction be identified and treated early.¹

Right ventricular dysfunction can be caused by any condition that exacerbates pulmonary hypertension or reduces right ventricular contractility.³ Echocardiography remains pivotal for assessment and monitoring of right ventricular function. Clinical signs that may be present include a rising central venous pressure, pronounced v-wave, and peripheral edema.

Management of acute right ventricular failure revolves around addressing the offending agent(s) and optimizing function.^{1–3} Any acidosis, hypercarbia, and hypoxemia should be corrected, and inotropic agents initiated or increased to support right ventricular function. Inhaled pulmonary arterial vasodilators should be considered to reduce pulmonary vascular resistance. Furthermore, bed positioning and diuretics can therapeutically decrease preload to an over-stretched, failing right ventricle.

Competing Interests

The authors declare no competing interests.

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