

Cardiovascular Imaging In-a-Month

● Unusual Shunt Disease

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CASE

A 23-year-old man presented with palpitation. He had undergone surgical closure of an atrial septal defect at age 3 years. A grade III ejection murmur was heard best at the second right sternal border. Electrocardiography showed first-degree atrioventricular block with right bundle branch block. Chest radiography showed no cardiomegaly or pulmonary edema. The level of B-type natriuretic peptide was 9.7 pg/ml. Transthoracic echocardiographic examination was performed (**Fig. 1**).

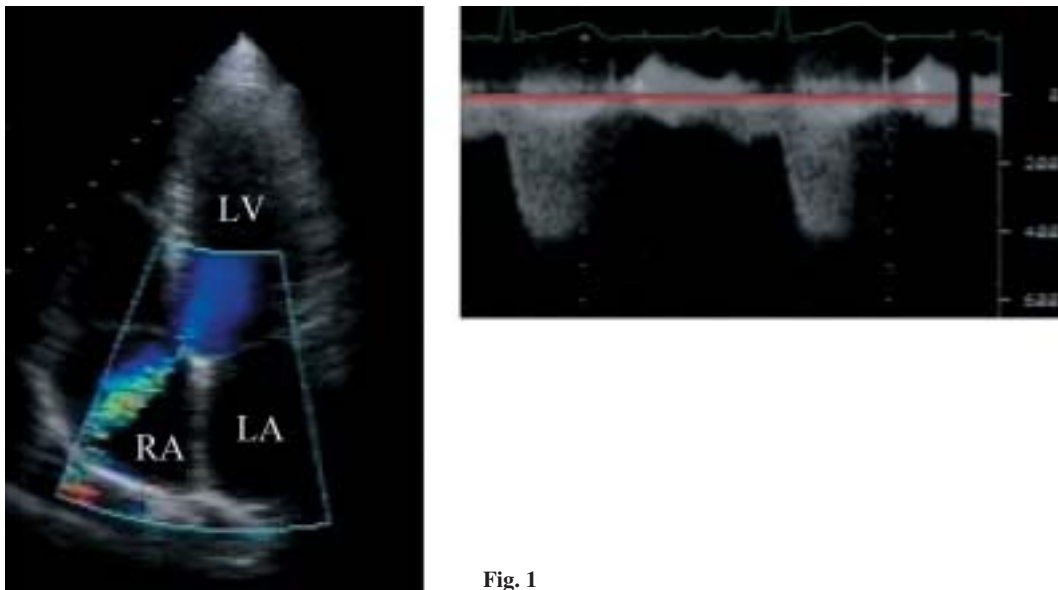


Fig. 1

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Manuscript received February 2, 2007; revised February 9, 2007; accepted March 28, 2007

Point of Diagnosis

Transthoracic echocardiography indicated a left ventricle to right atrium shunt (**Fig. 1**). The pulmonary to systemic blood flow ratio was calculated as 1.1. Subsequent transesophageal echocardiography demonstrated a direct communication from the left ventricular outflow tract to the right atrium (**Fig. 2**), known as the Gerbode defect, which is a rare type of ventricular septal defect.¹⁾ Specific morphology of the defect foramen was not elucidated because surgical closure was not performed. Holter monitoring showed frequent isolated premature ventricular contractions, which might have caused his palpitations.

Gerbode defect is generally a congenital heart disease, but is possibly acquired secondary to endocarditis.²⁾ He had no documented previous history of endocarditis. The operative procedure for atrial septal defect remained unclear; we cannot know whether the Gerbode defect was just coincidental to

atrial septal defect. In the present case, echocardiography provided useful information in the diagnosis of this unusual shunt disease and in the decision on therapeutic strategy. He has been doing well without any medication.

Diagnosis: Left ventricular-to-right atrial shunt (Gerbode defect)

Key Words: Heart septal defects; Echocardiography, transthoracic

References

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- 2) Velebit V, Sch neberger A, Ciaroni S, Bloch A, Maurice J, Christenson JT, Simonet E, Schmuziger M: Acquired left ventricular-to-right atrial shunt (Gerbode defect) after bacterial endocarditis. *Tex Heart Inst J* 1995; **22**: 100–102

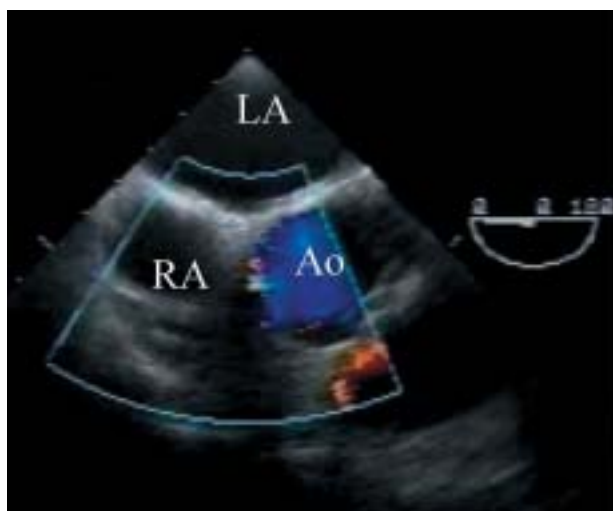


Fig. 1 Transthoracic echocardiogram in the apical four-chamber view

Left: Color Doppler imaging. *Right:* Continuous wave Doppler recording of shunt flow.

A high velocity flow is visible from the left ventricle to the right atrium during systole.

LV = left ventricle; RA = right atrium; LA = left atrium.

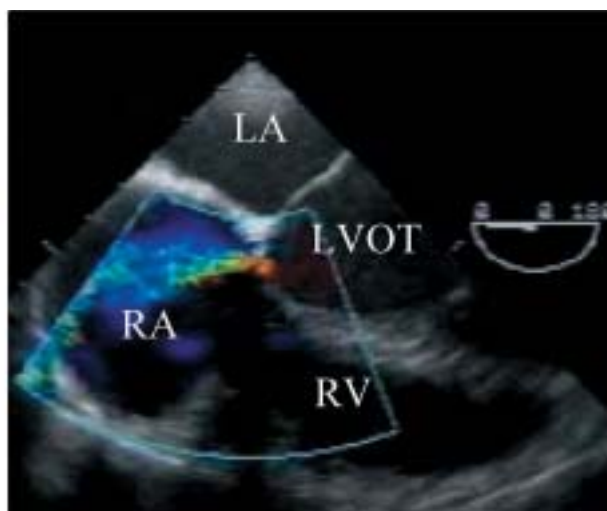


Fig. 2

Fig. 2 Transesophageal echocardiograms

Left: Aorta level. *Right:* Left ventricular outflow tract level.

A shunt flow originates from the atrioventricular portion of the subaortic membranous septum and is directed into the right atrium.

Ao = aorta; LVOT = left ventricular outflow tract; RV = right ventricle. Other abbreviations as in Fig. 1.