



A ventricular septal defect restricted by the tricuspid septal leaflet and discrete subaortic membrane presenting with high-grade atrioventricular block and syncope



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A 32-year-old woman presented to emergency department with syncope. Her medical history was unremarkable, and cardiac auscultation revealed a localised, high-frequency, 3/6 pansystolic murmur at the 3rd and 4th left intercostal spaces. The 12-lead electrocardiogram showed high-grade atrioventricular block with a rate of 46 bpm (Fig. 1, Panel A). Transthoracic echocardiography

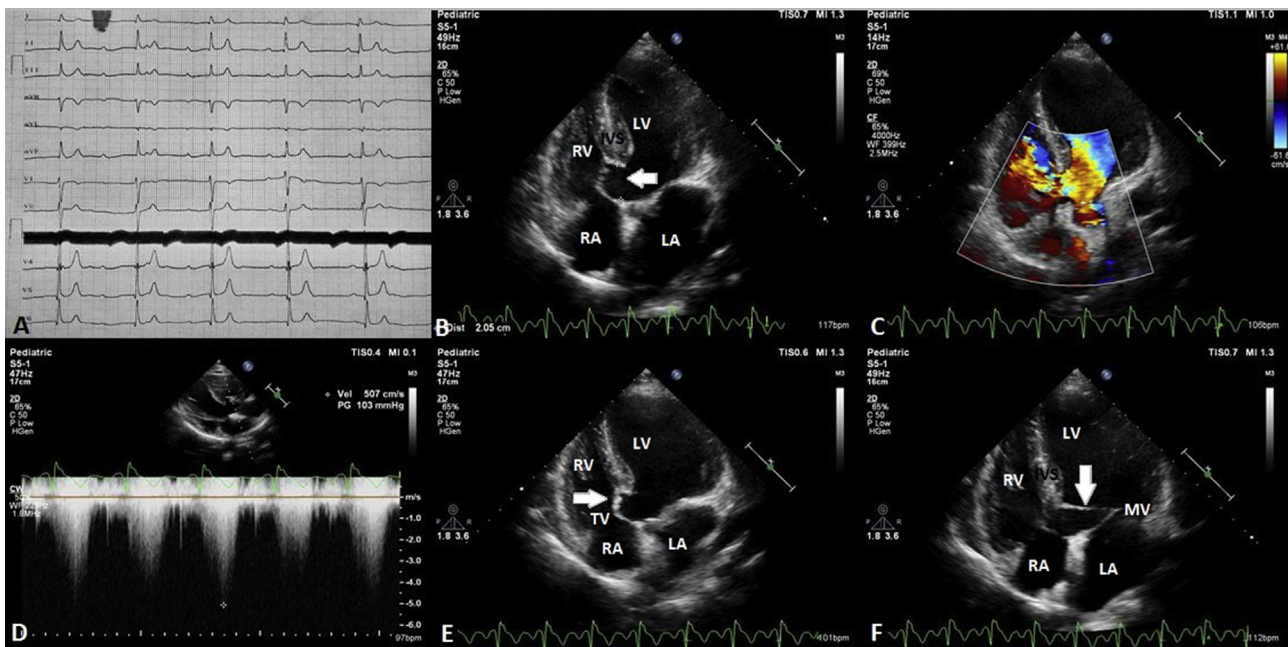


Fig. 1. The 12-lead electrocardiogram reveals high-grade atrioventricular block (Panel A), transthoracic echocardiography apical four-chamber view reveals a 20-mm sized membranous ventricular septal defect (Panel B, arrow), left-to-right shunt was observed in color (Panel C) and continuous wave Doppler echocardiography with a gradient of 103 mmHg (Panel D). Transthoracic echocardiography apical four-chamber view reveals a restriction of ventricular septal defect and left-to-right shunt by the tricuspid septal leaflet (Panel E, arrow) and a discrete subaortic membrane between baseline portion of the interventricular septum and mitral anterior leaflet (Panel F, arrow) (LA: left atrium, LV: left ventricle, RA: right atrium, RV: right ventricle, IVS: interventricular septum, MV: mitral valve, TV: tricuspid valve).

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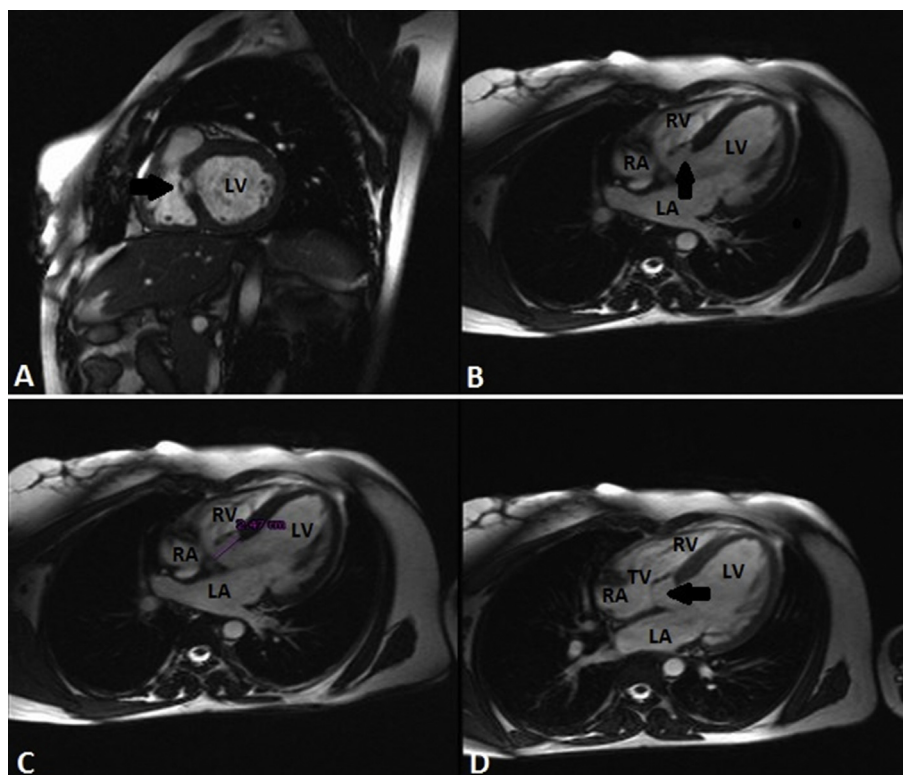


Fig. 2. Cardiac magnetic resonance imaging shows ventricular septal defect and discrete subaortic membrane (arrows) (LA: left atrium, LV: left ventricle, RA: right atrium, RV: right ventricle, IVS: interventricular septum, TV: tricuspid valve).

revealed normal left ventricular systolic functions with an ejection fraction of 63%, mild-to-moderate mitral regurgitation, mild tricuspid regurgitation with a pulmonary systolic pressure of 30 mmHg and normal right ventricular chamber size and systolic functions. In the apical four-chamber view, a 20-mm sized membranous ventricular septal defect (VSD) was seen in the baseline portion of the interventricular septum and left-to-right shunt was observed in color and continuous wave Doppler echocardiography (Fig. 1, Panel B–D). The VSD and left-to-right shunt were restricted by the tricuspid septal leaflet and the patient's Qp/Qs ratio was <1.5 (Fig. 1, Panel E). Additionally, a discrete subaortic membrane between baseline portion of the interventricular septum and mitral anterior leaflet was observed in the apical four-chamber view without left ventricular outflow tract gradient (Fig. 1, Panel F). Ventricular septal defect and discrete subaortic membrane diagnoses were confirmed by cardiac magnetic resonance imaging (Fig. 2, Panel A–D). Following refusal of cardiac pace-maker implantation, the patient was discharged with a program of intensive follow-up.

Ventricular septal defects may cause rhythm and conduction disturbances such as high-grade atrioventricular block. Cases with membranous ventricular septal defect and atrioventricular block become symptomatic in the 3rd or 4th decade of life.^{1–3} In this case

report, we described a 32-year-old woman with ventricular septal defect and discrete subaortic membrane without left ventricular outflow tract obstruction associated with high-grade atrioventricular block and syncope.

Funding statement

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Conflict of interest

None.

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