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A Case of Biventricular Hypertrophic Obstructive Cardiomyopathy: Echocardiographic Diagnosis

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Case Description

A woman in her forties was referred to University Hospital Kyoto Prefectural University of Medicine for further examination and evaluation of heart disease. She was diagnosed with ventricular septal defect at birth and had been followed yearly since then. She had no history of hypertension and took no medications. She had no significant family history, such as sudden death or ventricular arrhythmia. Although she reported that she sometimes reported dyspnea, it seemed not to be reproducible. She did not report leg edema or general fatigue. Jugular venous distension was not observed. Transthoracic echocardiogram revealed prominent biventricular hypertrophy; the maximum thickness of the ventricular septum was 19 mm and that of the right ventricular (RV) free wall was 12 mm (Fig. 1). There was systolic anterior motion of the mitral valve involving both the anterior and posterior leaflets (Fig. 2A). The peak pressure gradient was 61 mm Hg because of left ventricular outflow tract obstruction (Fig. 2B). Two types of accelerated flow were observed in the right ventricle during systole (Fig. 3A). There was mid-systolic shunt flow from the left ventricle to the right ventricle and late-systolic obstruction involving the tricuspid valve leaflet and RV free wall (Fig. 3B). Although bedside provocation was difficult because of the patient's inability to understand, she was considered to have biventricular hypertrophic obstructive cardiomyopathy associated with a ventricular septal defect. Although her symptoms were atypical, her plasma brain natriuretic peptide level was as high as 862.1 pg/mL. She was prescribed cibenzoline in addition to a β-blocker and was scheduled to undergo cardiac magnetic resonance imaging to clarify the disease etiology, with the possibility of subsequent surgical intervention.

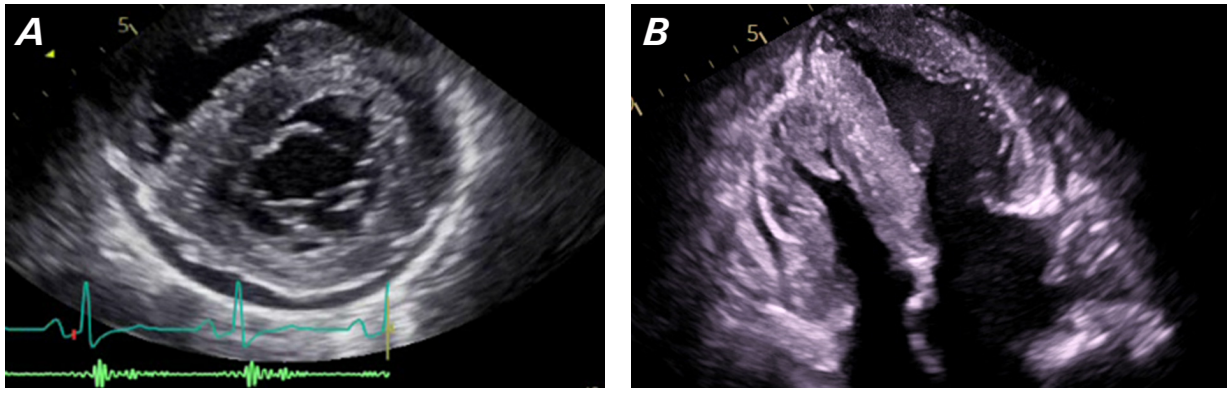

Fig. 1 A) Parasternal short-axis (level of mitral valve) and **B)** apical 4-chamber views show prominent biventricular hypertrophy. Supplemental motion image for A also shows anterior motion of the mitral valve and narrowing of the right ventricular outflow tract during systole.

Supplemental motion image is available for Fig. 1.

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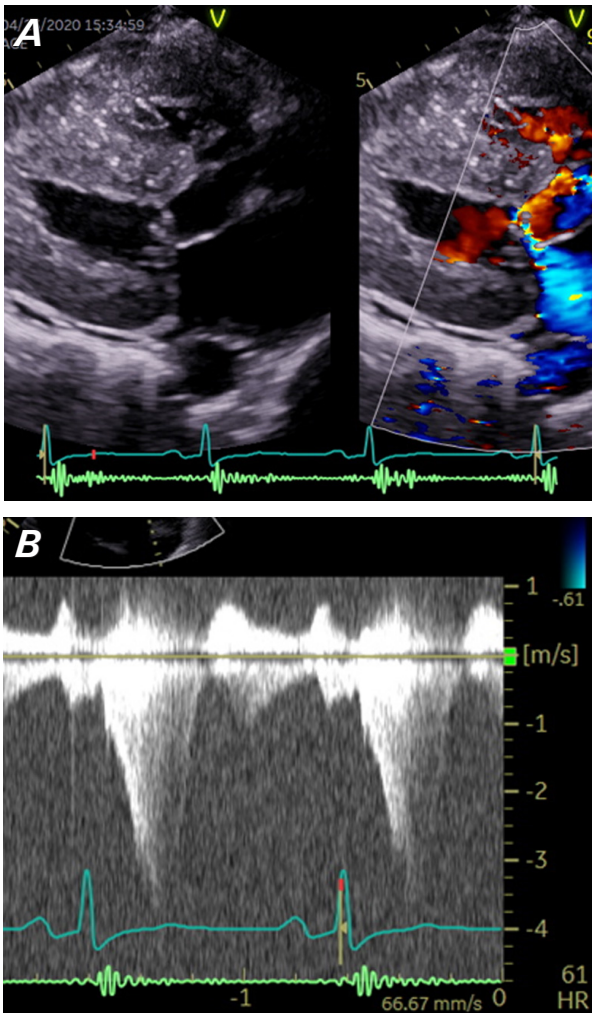

Fig. 2 A) Parasternal long-axis view shows mitral regurgitation resulting from systolic anterior motion of the mitral valve. **B)** Significant left ventricular outflow tract obstruction is shown.

Comment

Although the assessment of RV abnormalities is difficult because of the complex morphology of the ventricle, transthoracic echocardiography is a unique modality that provides information about both morphology and intracardiac pressures and is straightforward to perform. Several studies have reported RV involvement in patients with hypertrophic cardiomyopathy, but RV obstruction was found to be rare.[1,2] Clinicians should consider checking for RV abnormalities in this population because they may cause significant symptoms or worsen the clinical course.

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Abbreviations and Acronyms

RV right ventricular

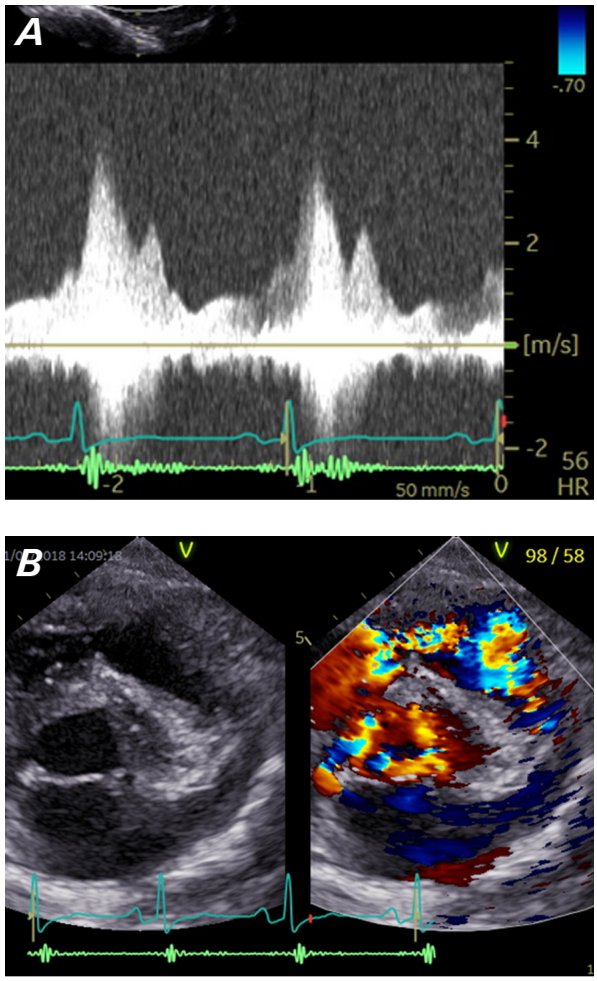

Fig. 3 A) Two types of accelerated flow are apparent in the right ventricular outflow tract. **B)** Accelerated flow in the right ventricular outflow tract involves the tricuspid valve leaflet and right ventricular free wall.

Supplemental motion image is available for Fig. 3B.

Conflict of Interest Disclosures: The authors declare that there are no conflicts of interest.

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