

Images in Cardiology

This section edited by Edward A. Geiser, M.D.

Tricuspid Stenosis and Regurgitation: Doppler and Color Flow Echocardiography and Cardiac Catheterization Findings

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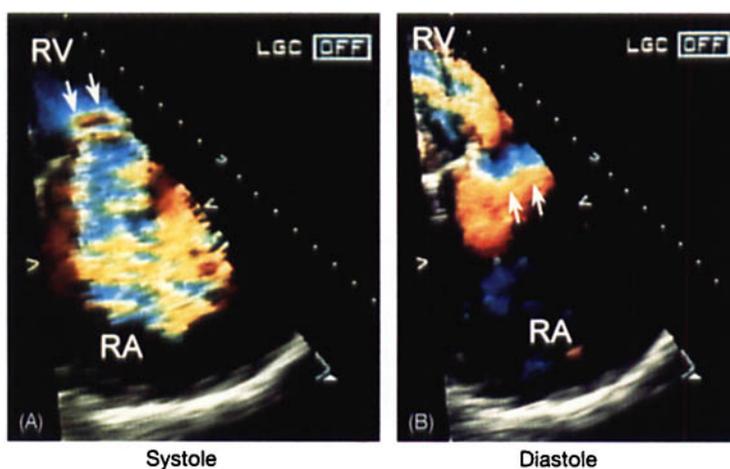


FIG. 1 Transthoracic echocardiography of right ventricular inflow view. (A) Color flow image shows severe tricuspid regurgitation. Note the prominent proximal flow convergence at the ventricular surface of the tricuspid leaflets (arrow) during systole. (B) Prominent proximal flow convergence was noted at the atrial surface of the tricuspid leaflets (arrow) during diastole, indicating significant tricuspid stenosis. RA = right atrium, RV = right ventricle.

A 41-year-old woman presented with shortness of breath of three years' duration. Her past medical history was unremarkable. Physical examination revealed a chronically ill appearance with malar flush and distended neck veins. The electrocardiogram revealed atrial fibrillation with rapid ventricular

response, incomplete right bundle-branch block, and right axis deviation. Transthoracic echocardiography in the apical four-chamber view revealed a calcified stenotic mitral valve. Diastolic doming of fibrothickened tricuspid leaflets was also noted. Color flow imaging showed severe tricuspid regurgitation with prominent proximal flow convergence at the ventricular surface of the tricuspid leaflets during systole (Fig. 1A). Prominent proximal flow convergence was also noted at the atrial surface of the tricuspid leaflets during diastole, indicating significant tricuspid stenosis (Fig. 1B). Hemodynamic assessment was performed by simultaneous Doppler echocardiography and cardiac catheterization (Fig. 2). Doppler echocardiography showed that peak and mean diastolic pressure gradients across the tricuspid leaflets were 17.8 and 6.9 mmHg, respectively, at the heart rate of 70 beats/min. Peak velocity of the tricuspid regurgitant jet was approximately 2.4 m/s. Simultaneous pressure tracing of the right atrium and right ventricle showed a significant pressure gradient between

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Received: September 29, 1998

Accepted with revision: April 28, 1999

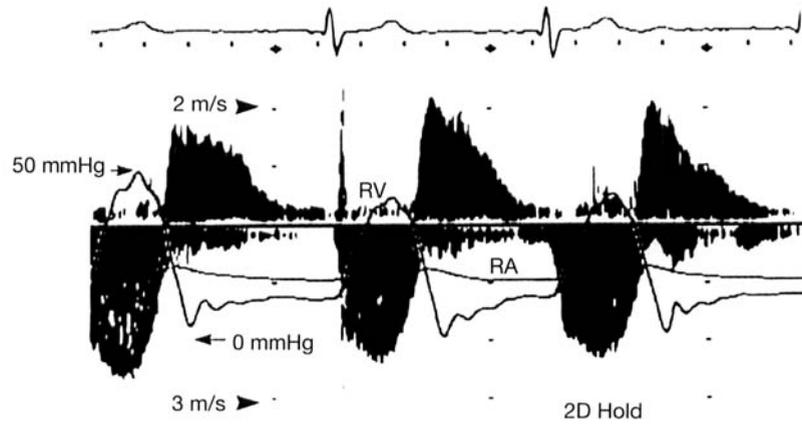


FIG. 2 Simultaneous pressure tracing of right atrium and right ventricle and transtricuspid valve flow velocity by Doppler echocardiography. Increased forward inflow velocity is noted with prolongation of pressure half-time.

the two chambers during diastole. Right ventricular pressure was 50/2/16 mmHg. Mean right atrial pressure was 20 mmHg. Replacement of both mitral and tricuspid valves was performed with St. Jude mechanical valves. The patient subsequently recovered and was uneventfully discharged several days later.

Reference

Rivera JM, Vandervoort PM, Mele D, Siu S, Morris E, Weyman AE, Thomas JD: Quantification of tricuspid regurgitation by means of the proximal flow convergence method: A clinical study. *Am Heart J* 1994;127:1354-1362