

Balloon dilatation of tricuspid stenosis caused by carcinoid heart disease

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Abstract

Double balloon dilatation of tricuspid stenosis caused by carcinoid heart disease was successful in a woman of 77.

Case report

A 77 year old woman presented with a one year history of progressive dyspnoea with associated ankle oedema, weight loss, flushing attacks, and profuse recurrent diarrhoea.

On examination the pulse was regular and she was normotensive. Jugular venous pressure was elevated with a prominent systolic wave. There was a mid-diastolic murmur at the left sternal edge and a pansystolic murmur in the lower parasternal area; both were louder on inspiration. There was also pitting oedema up to the lower abdomen, pulsatile 4 cm hepatomegaly, and ascites.

The chest x ray showed cardiomegaly with upper lobe venous distension suggestive of pulmonary oedema. Haemoglobin, urea and electrolytes, liver function tests, and the electrocardiogram were within normal limits. Cross sectional echocardiography showed thickening and reduced excursion of the tricuspid valve. Doppler echocardiography showed a gradient of 10 mm Hg across the tricuspid valve and moderate tricuspid regurgitation. Liver ultrasound examination showed multiple echogenic areas throughout the liver parenchyma consistent with multiple metastases. Urinary 5-hydroxyindole acetic acid excretion was between 82-189 mg/24 h (normal < 14 mg/24 h). These findings con-

Results of Doppler examination and catheter studies before and after dilatation

	Before dilatation	After dilatation
Right atrial pressure (mm Hg):		
"a" wave	24	24
"v" wave	44	36
Right ventricular pressure (mm Hg):		
Systolic	52	50
End diastolic	18	20
Tricuspid valve gradient (mean mm Hg)	10.5	7.6
Heart rate (beats/min)	75	75
Tricuspid valve area (cm ²) (Doppler)	0.9	1.4

firmed the diagnosis of malignant carcinoid syndrome affecting the tricuspid valve.

The patient was treated with somatostatin analogue and diuretics. We considered the tricuspid stenosis to be the most important abnormality. In view of her poor clinical condition and associated malignancy we attempted balloon dilatation of the tricuspid valve.

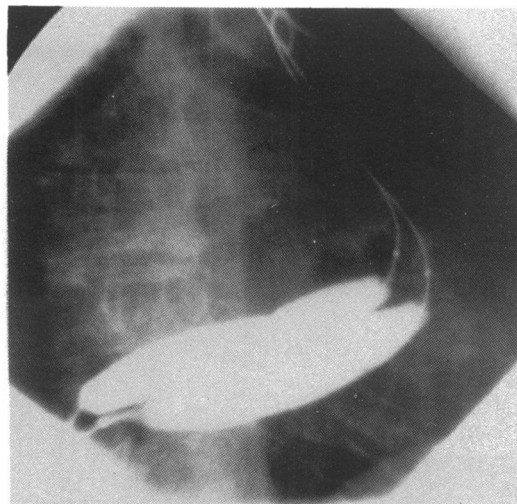
Two 7 French Gensini catheters were advanced through the right femoral vein, across the tricuspid valve, and lodged in the main pulmonary artery. They were replaced by two 0.038 inch exchange guide wires. Two balloon catheters (18 mm and 15 mm) were passed over the guide wires and fully inflated across the valve (figure). Doppler and direct catheter pressure measurements were obtained at regular intervals throughout the procedure (table).

The patient did well immediately after the procedure. There were reductions in dyspnoea and pulmonary and peripheral oedema. Follow up echocardiography up to a month after the procedure showed no increase in valve gradient or in the degree of tricuspid valve regurgitation.

Discussion

Carcinoid heart disease was originally described in 1954 by Thorson *et al.*¹ Over half the tumours arise initially in the appendix and the rest arise from the large intestine. When liver metastases occur hormonal factors including 5-hydroxytryptamine can produce direct cardiac effects.

Characteristically, the right sided cardiac valves are more commonly affected than the left sided valves. The ventricular aspects of the valve leaflets are affected by fibrous plaques. These consist of smooth muscle cells embedded in connective tissue, and endothelial thickening may occur. Clinically, pulmonary stenosis and tricuspid regurgitation



Two balloon catheters fully inflated across the tricuspid valve.

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are the commonest valve lesions although, as in this patient, tricuspid stenosis also occurs. The prognosis for patients with carcinoid heart disease is poor.² The most common cause of death is heart failure from valve disease.

Successful balloon dilatation of tricuspid valve stenosis of rheumatic origin³ and of a stenosed bioprosthetic valve⁴ have already been described.

We showed that balloon dilatation of tricuspid valve stenosis caused by carcinoid heart disease is a safe and effective treatment. The prognosis for these patients is poor and if palliative cardiac surgery can be avoided the patient's quality of life will be much improved. We believe that the results of balloon dilatation of pulmonary stenosis

caused by carcinoid heart disease are likely to be as effective as dilatation of the tricuspid valve.

We thank Dr D Russell Hall for allowing us to report this case.

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- 2 Ross EM, Roberts WC. The carcinoid syndrome: comparison of 21 necropsy subjects with carcinoid heart disease to 15 necropsy subjects without carcinoid heart disease. *Am J Med* 1985;79:339-54.
- 3 Al Zaibag M, Ribeiro P, Al Kasab S. Percutaneous balloon valvotomy in tricuspid stenosis. *Br Heart J* 1987;57:51-3.
- 4 Feit F, Stecy PJ, Nachamie MS. Percutaneous balloon valvuloplasty for stenosis of a porcine bioprosthesis in the tricuspid valve position. *Am J Cardiol* 1986;58:363-4.