

Fig. 2. M-mode echocardiogram showing dilated right ventricle (RV) and paradoxical interventricular septal (IVS) motion. LII = lead II of ECG; MV = mitral valve.

as the rest of the fingers.<sup>5</sup> Additionally, the thumb may be triphalanged, absent, or simply longer than normal in association with a short forearm which displays limited supination and pronation. All these upper extremity features are combined with an ostium secundum atrial septal defect, thereby completing the salient anatomy of the condition. The patient under current investigation did not have anomalies of the thumb or an ostium secundum atrial septal defect. We propose that the association of Poland's syndrome with an atrial septal defect is not merely a chance phenomenon. It is likely that there is a wide spectrum of upper limb and torso developmental variations which are linked to defects in the atrial septum. This thesis is compatible with the mesenchymal disturbance which has been invoked to explain both Poland and Holt-Oram syndromes. Careful investigation for atrial septal defect in those patients affected with Poland's syndrome would appear warranted.

#### REFERENCES

1. Poland A: Deficiency of the pectoral muscles. *Guy Hosp Rep* 6:191, 1841.
2. Clarkson P: Poland's syndactyly. *Guy Hosp Rep* 111:335, 1962.
3. Mace JW, Kaplan JM, Schanberger JE, Gotlin RW: Poland's syndrome. Report of seven cases and review of the literature. *Clin Pediatr* 11:98, 1972.
4. Brans YW, Lintermans JP: The upper limb—Cardiovascular syndrome: A report of two African cases with a review of the literature. *Am J Dis Child* 124:779, 1972.
5. Silverman ME, Hurst JW: Inspection of the patient. In Hurst JW, editor: *The heart. Arteries and veins*. New York, 1982, McGraw-Hill Book Co, Inc, pp 165-182.

#### Echocardiographic diagnosis of flail anterior leaflet in tricuspid endocarditis

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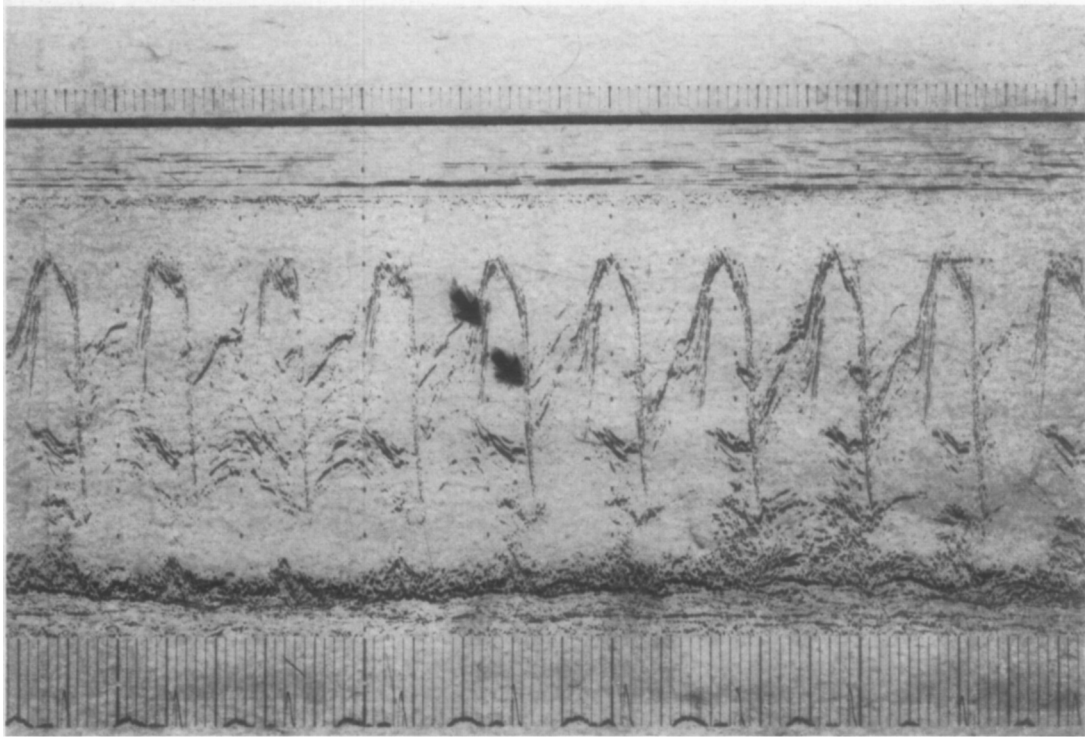
The utility of echocardiography in documenting the presence of valvular vegetations has been clearly demonstrated.<sup>1</sup> Likewise, echocardiographic criteria for diagnosing flail mitral<sup>2</sup> and aortic<sup>3</sup> leaflets have been defined. Although the incidence of tricuspid valve endocarditis has greatly increased in recent years,<sup>4,5</sup> the importance of the echocardiographic finding of a flail tricuspid valve leaflet in the setting of acute infective tricuspid endocarditis has not been previously emphasized. Of 45 heroin addicts with tricuspid valve endocarditis, two had M-mode echocardiograms demonstrating flail tricuspid leaflets. The clinical manifestations and eventual outcome in these patients differed markedly from the rest of the group.

**Patient 1.** A 29-year-old woman was hospitalized with an acute illness characterized by fever, a murmur of

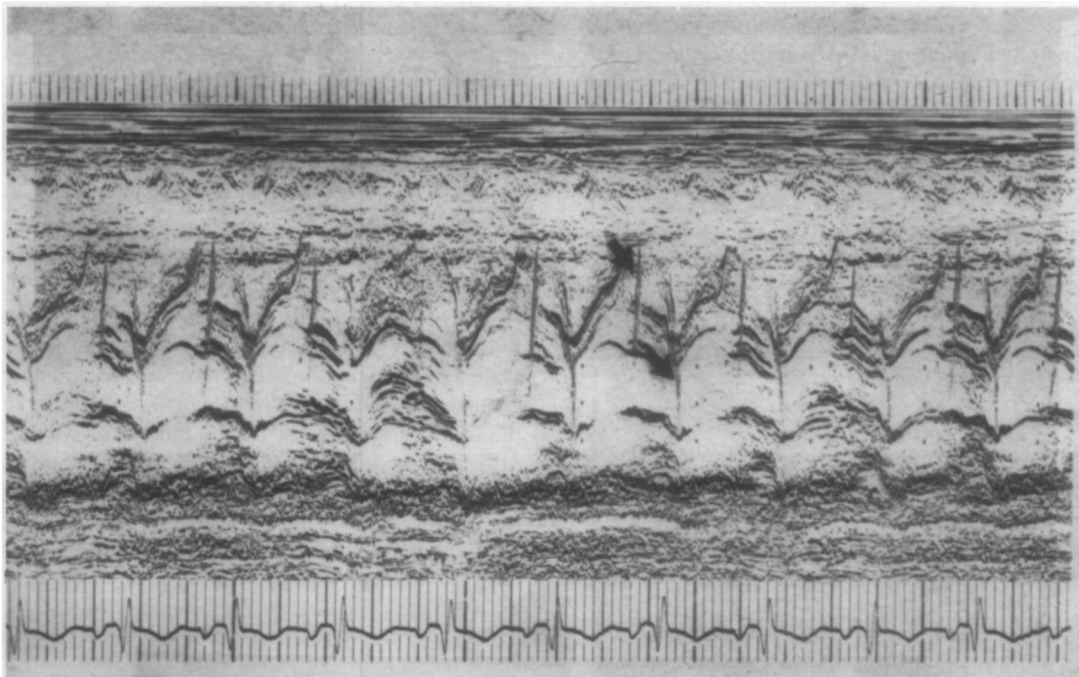
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**Fig. 1.** M-mode echocardiogram demonstrating chaotic motion and wide excursion of the anterior leaflet of the tricuspid valve (*arrows*) in patient 1.



**Fig. 2.** M-mode echocardiogram demonstrating chaotic motion and wide excursion of the anterior leaflet of the tricuspid valve (*arrows*) in patient 2.

tricuspid insufficiency, multiple bilateral pulmonary infiltrates, and blood cultures positive for *Staphylococcus aureus*. An initial M-mode echocardiogram demonstrated no abnormality of the tricuspid valve. Her hospital course was complicated by persistent fever, extension of a right lower lobe pneumonia, development of a large exudative right pleural effusion which required drainage, and newly developed signs of severe tricuspid insufficiency. A repeat M-mode echocardiogram showed a flail anterior tricuspid leaflet (Fig. 1). Following a prolonged but successful course of antibiotic therapy, cardiac catheterization confirmed the diagnosis of severe tricuspid insufficiency with a cardiac index of 2.6 L/min/m<sup>2</sup>. At operation, the anterior leaflet of the tricuspid valve had completely detached. A Hancock prosthesis was inserted and the patient's postoperative course was uneventful.

**Patient 2.** A 28-year-old man was hospitalized with fever, an extensive consolidated right lower lobe infiltrate, right pleural effusion, physical signs of severe tricuspid insufficiency, and blood cultures positive for *Micrococcus* sp. An M-mode echocardiogram showed a flail anterior tricuspid leaflet (Fig. 2). Despite aggressive and appropriate antibiotic therapy and drainage of the pleural effusion, he remained febrile and developed progressively severe hypoxia. Right heart catheterization confirmed severe tricuspid insufficiency, a large tricuspid valve vegetation, and a cardiac index of 1.1 L/min/m<sup>2</sup>. Pulmonary angiography revealed multiple segmental emboli with almost no blood flow to the right lower lobe. Tricuspid valvectomy was performed after 6 weeks of antibiotic therapy. Complete valvular disruption was noted. The patient remained stable for 2 weeks but then had a fatal respiratory arrest after ingesting pills given to him by a family member.

The incidence of tricuspid valve endocarditis has been increasing, particularly in intravenous drug users.<sup>4,5</sup> Diagnosis is often difficult, with the predominant clinical presentation being acute pneumonia from septic embolization.<sup>4,6</sup> Vegetations are larger and less destructive on the tricuspid valve than on the mitral valve,<sup>6</sup> and mortality is infrequent.<sup>5</sup> Heart failure is uncommon with acute severe tricuspid regurgitation because of the small pressure difference between the right atrium and right ventricle,<sup>7</sup> and surgery is rarely required unless persistent infection is present. Valvectomy with insertion of a prosthetic valve at a later date following bacteriologic cure is the surgical procedure of choice.<sup>7</sup>

Rupture of several tricuspid chordae tendineae was present in 5 of 11 necropsies reported by Roberts.<sup>4</sup> This finding suggests that patients with tricuspid endocarditis and flail leaflets have a worse prognosis when treated medically than do those without valvular disruption. Vegetations large enough to disrupt the valvular apparatus may cause more extensive septic embolization, parenchymal lung disease, and mortality. The M-mode echocardiographic appearance of the flail anterior tricuspid leaflet with chaotic motion and wide excursion is highly characteristic of the lesion. The diagnosis of a flail tricuspid valve in the setting of tricuspid infective endocar-

ditis may be an important indication for early valvectomy.

#### REFERENCES

1. Dillon JC, Feigenbaum H, Konecke LL, Davis RH, Chang S: Echocardiographic manifestations of valvular vegetations. *AM HEART J* 86:698, 1973.
2. Sweatman T, Selzer A, Kamagaki M, Cohn K: Echocardiographic diagnosis of mitral regurgitation due to ruptured chordae tendineae. *Circulation* 46:580, 1972.
3. Wray TM: Echocardiographic manifestations of flail aortic valve leaflets in bacterial endocarditis. *Circulation* 51:832, 1975.
4. Roberts WC, Buchbinder NA: Right-sided valvular infective endocarditis. A clinico-pathologic study of twelve necropsy patients. *Am J Med* 53:7, 1972.
5. Banks T, Fletcher R, Ali N: Infective endocarditis in heroin addicts. *Am J Med* 55:444, 1973.
6. Andy JJ, Sheikh MU, Ali N, et al: Echocardiographic observations in opiate addicts with active infective endocarditis. *Am J Cardiol* 40:17, 1977.
7. Robin E, Thoms NW, Arbulu A, Ganguly SN, Magnisalis K: Hemodynamic consequences of total removal of the tricuspid valve without prosthetic replacement. *Am J Cardiol* 35:481, 1975.

### Aortic aspergilloma resulting in supravulvar aortic stenosis after aortocoronary bypass surgery

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The first case of *Aspergillus* aortitis was reported by Hadorn in 1960.<sup>1</sup> During the next decade fungal infections complicating cardiovascular surgery occurred with increasing frequency.<sup>2</sup> Aortitis, especially in the absence of aortic valve surgery, remains an unusual manifestation of *Aspergillus* infection. Our patient is the third case in whom a large supravulvar mass, not involving the aortic valve, has been found in *Aspergillus* aortitis. This is the first reported case of an aortic root aspergilloma following aortocoronary bypass surgery.

A 60-year-old man with three-vessel coronary artery disease had bypass graft surgery in October, 1978. Standard operative technique with aortic cross clamping and administration of cardioplegic solution via aortic root injection was employed. Preoperatively, prophylactic penicillin, streptomycin, and nafcillin were administered. His postoperative course was unremarkable except for atrial fibrillation which resolved with pharmacotherapy. He was discharged 3 weeks after surgery without significant symptoms. Outpatient follow-up was noteworthy only for

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