DISCUSSION

Congenital anomalies of the mitral valve that cause either mitral insufficiency or mitral stenosis are well known. The anomalies have been reported to encompass such diverse malformations as accessory mitral valvular tissue, aplasia of the mitral valve, mitral arcade, and the "parachute" mitral valve. This case of a hamartoma of the left ventricle involving the mitral apparatus represents, to our knowledge, both a previously undescribed malformation of the mitral valve and a third hemodynamic consequence of congenital mitral anomalies—a space-occupying lesion of the left ventricle that produced the hemodynamic picture of a cardiomyopathy.

Although the physical examination findings for this patient suggested mitral stenosis, the presence of equal left ventricular end-diastolic and pulmonary capillary wedge pressures at rest and the marked increase in left ventricular end-diastolic pressure following angiography (Table 1) were more consistent with a cardiomyopathy.

Surgical examination of the heart allowed for therapy, a definitive diagnosis of a hamartoma of the left ventricle and mitral valve apparatus, and a clear explanation of the cardiac catheterization data. The apical portion of the left ventricular cavity was deformed by the hamartomatous tissue, which effectively divided the cavity into two distinct parts: a subvalvular chamber immediately below the mitral valve leaflets and an apical cavity connected by a tunnel-like passage, thus decreasing the effective left ventricular cavity size and producing the hemodynamic picture of a restrictive cardiomyopathy.

Pathologically, this case most resembled a "parachute" mitral valve. However, unlike the funnel-like arrangement of chordae, which converge to insert into a single major papillary muscle seen in "parachute" mitral valve, the chordae in this case were dysplastic, arranged in a colonnade fashion around the circumference of an intracavitary mass composed of hamartomatous collection of blood vessels and connective tissue elements.

Primary cardiac tumors are rare in childhood. Intracavitary myxomas are the most common primary cardiac tumor in adults, while intracavitary fibromas and intramural rhabdomyomas are the most common cardiac tumors in childhood. The clinical manifestations of cardiac tumors vary considerably, making diagnosis and treatment difficult. Our case of a subendocardial hamartoma involving the papillary muscles and left ventricular free wall represent an extremely rare type of intracardiac tumor that can be successfully diagnosed and treated.

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Two-Dimensional Echocardiograms of a Transvenous Left Ventricular Pacing Catheter* CDR Preston L. Judson, MC, USN; CDR Thomas B. Moore, MC, USNR; LCDR Michael Suwan, MC, USNR; and CAPT Halbert E. Ashworth, MC, USN

A permanent transvenous pacemaker lead was placed across the atrial septum and retained in the left ventricle for eight years. M-mode echocardiograms showed a linear echocardiographic density in the left atrium and mitral valve. Cross-sectional echocardiograms further defined the location and course of the pacing lead.

Two-dimensional echocardiographic studies have identified left ventricular thrombus and tumor, valvular vegetation, and left atrial myxoma. The technique has been used to visualize right ventricular intracavitary pacing leads. This case represents the sector echocardiographic definition of a malpositioned left ventricular pacing catheter.

CASE REPORT

In 1972, a 40-year-old man underwent placement of a

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The views expressed herein are those of the authors and do not necessarily reflect the views of the US Navy or the Department of Defense.

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permanent bipolar transvenous pacing catheter (General Electric model A2070DB) with a generator (General Electric model A2072D) for symptomatic complete heart block and atherosclerotic heart disease. In 1973, the electronic system failed, and attempts to extract the lead system were unsuccessful. A pacing catheter (Medtronic) and generator were inserted.

Evaluation in January 1980 for unstable angina pectoris included a chest x-ray film which showed a posterior orientation in the cardiac silhouette of the retained permanent bipolar transvenous lead (General Electric), with a wide separation of the proximal and distal electrodes and fracture of the wire beyond the proximal electrode. M-mode (Fig 1) and sector echocardiographic (Fig 2) scans defined the echocardiographic density of the pacing catheter extending from the right atrium, interatrial septum, left atrium, and mitral orifice into the left ventricular inflow tract. Cinefluoroscopic examination and cardiac catheterization, including left ventriculograms, were consistent with a malpositioned left ventricular pacing catheter. Coronary angiograms demonstrated an 80 percent occlusion of the proximal left anterior descending coronary artery.

Coronary revascularization was performed, as was right atriotomy and atrial septostomy for removal of the retained pacemaker lead. The catheter was intact to the proximal electrode, which was buried on the fossa ovalis. There was friable debris on the left atrial surface of the fossa ovalis. Exposed wire, which was corroded but free of thrombus extended from the left interatrial septum through the mitral orifice, with an intact silicone rubber sheath encasing the distal 2 cm of the lead. This portion of wire and sheath were removed, leaving the distal electrode buried in papillary muscular structure. The postoperative course was uneventful, and repeat two-dimensional echocardiograms demonstrated an echocardiographic density of the distal electrode but absent bands of echoes in the mitral orifice and left atrium. The M-mode echocardiogram was normal.

Figure 1. Echocardiogram showing linear echoes (arrows) of pacing lead in left atrium and mitral valve. AML, Anterior mitral leaflet; AO, aortic root; and LA, left atrium.

Figure 2. Preoperative parasternal biventricular inflow (A, left) and apical four-chamber (B, right) sector scans. Large arrows show retained pacing lead (PL). AML, Anterior mitral leaflet; AS, atrial septum; LA, left atrium; LV, left ventricle; PML, posterior mitral leaflet; RA, right atrium; RV, right ventricle; TV, tricuspid valve; and VS, ventricular septum.
DISCUSSION

Migration, perforation, and fracture of right ventricular pacing catheters are known complications of permanent transvenous pacing catheters. This case is a unique occurrence of inadvertent and unrecognized malposition of a permanent transvenous lead through the atrial septum, left atrial cavity, and mitral orifice, with placement in the left ventricular cavity. Subsequent radiographic evaluation determined a posterior orientation of the fractured pacing catheter. Although M-mode echocardiograms showed a left atrial and mitral valvular echocardiographic density, two-dimensional ultrasonographic studies accurately identified the location and spatial orientation of the catheter.

The echocardiographic characteristics of right ventricular pacing catheters have been defined. More recently, M-mode techniques have been used to locate a retained left atrial catheter. Although the M-mode echocardiogram may define an intracardiac mass, the single-plane view reveals a density that may be nonspecific; however, two-dimensional echocardiograms provide excellent evaluation of spatial configuration and mobility, as well as confirmation of the M-mode in the evaluation of an intracavitary mass.

Inasmuch as long-term retention of a fractured left atrioventricular permanent pacing catheter has not been previously described, the potential complications are speculative. Friable debris present in the left atrium at the site of the fracture of the lead in our patient provided a source for systemic emboli. The corrosion of the wire noted at surgery could create further fragmentation of the lead, with resultant systemic embolization of the wire. Although thrombus was not present, the exposed wire was a potential nidus for formation of thrombus, with the risk of embolization. Consequently, surgical removal of the fragmented pacing lead in the left cardiac system was indicated.

This case represents two-dimensional echocardiographic confirmation and definition of an aberrant pacing catheter. This technique has defined the exact intracardiac course of the catheter and its location and presented precise information for surgical removal of an intracavitary left-sided foreign body. This case further emphasizes the potential of two-dimensional sector scans to localize intracardiac catheters or perhaps a traumatic foreign body.

REFERENCES

Lung Abscess Complicating Transbronchial Biopsy of a Mass Lesion*

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We report a rare complication of transbronchial lung biopsy. A lung abscess developed after transbronchial biopsy of a peripheral mass lesion. Persistent fever, leukocytosis, and roentgenographic evidence of increase in size of the biopsied mass are useful clues for the diagnosis of pneumonia surrounding a tumor.

Credle et al. reported a low incidence of morbidity (0.08 percent) and of mortality (0.01 percent) in 24,521 flexible fiberoptic bronchoscopic procedures. Among the complications, only two cases of pneumonia after bronchoscopy were described.

Pereira et al. described three patients with mass lesions who had new infiltrates distal to the tumor, fever, and leukocytosis after a bronchial biopsy. In this report, we describe a patient with a mass lesion in whom a lung abscess surrounding the tumor occurred after transbronchial biopsy.

CASE REPORT

A 42-year-old man was referred to St. Luke's-Roosevelt Hospital Center for evaluation of a circumscribed mass lesion in the right upper lobe shown on a routine chest x-ray film and recurrent seizures, which had been well controlled with diphenylhydantoin (Dilantin) and phenobarbital since he had been ten years old. He had been a one half pack/day cigarette smoker for 20 years, from which he had abstained for seven years. The patient complained of having had a dry cough for two weeks before admission.

On admission, results of a physical examination and the laboratory data including hemoglobin, leukocyte count, and

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