reported in association with sinus of Valsalva aneurysms. Premature pulmonic valve opening and early systolic aortic valve closure have been reported, but nevertheless, are nonspecific and can be associated with other disease states, such as pulmonic stenosis and idiopathic hypertrophic subaortic stenosis or discrete subvalvular membranous subaortic stenosis, respectively.

Cooperberg et al. described the M-mode findings of a ruptured sinus of Valsalva aneurysm. An abnormal echo anterior to the aortic root was visualized. This finding has also been reported with two-dimensional echocardiography. In addition, the diagnosis of sinus of Valsalva aneurysm has been suggested by the demonstration of a protrusion of the sinus into the right ventricular outflow tract. The two-dimensional study of our patient not only showed protrusion of the ruptured sinus into the right ventricular outflow tract, but also clearly depicted the aneurysmal right coronary cusp.

The pattern of right-sided diastolic fluttering of the interventricular septum in this case presentation appears to be specific for a ruptured sinus of Valsalva aneurysm. Diastolic fluttering of the right side of the interventricular septum is most likely due to the effect of the high pressure left-to-right shunt through the perforation in the aneurysmal right coronary sinus, with flow being directed towards the septum. The event commences with the second heart sound and appears to be holodiastolic, corresponding to the flow characteristics through the ruptured right sinus of Valsalva aneurysm. Right-sided septal fluttering may be missed with slow paper speed, and in order to demonstrate this finding, the paper speed should be increased to at least 100 mm/sec. Right-sided septal fluttering is not likely to be present in the left-to-right shunt of a ventricular septal defect because the jet blood flow is not directed towards the interventricular septum, but rather towards the right ventricular free wall and cavity. The disappearance of the septal fluttering after repair of the fistulous tract further confirms the ruptured sinus of Valsalva aneurysm as a cause of septal fluttering.

In summary, the combination of fluttering of the right side of the interventricular septum by M-mode echocardiography in association with an aneurysmal bulge of the sinus of Valsalva protruding into the right ventricular outflow tract by two-dimensional echocardiography is highly suggestive of a ruptured sinus of Valsalva aneurysm.

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**Cardiac Myxoma Arising From the Inferior Vena Cava**

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This report documents what we believe to be the first reported case of a cardiac myxoma originating from inferior vena caval tissue. Myxomas account for 50 percent of cardiac tumors and present with either embolic, obstructive, or constitutional symptoms and signs. Diagnosis is facilitated by angiography and echocardiography and should be followed promptly by careful and complete removal of the mass and adjacent tissue with close follow-up by clinical and echocardiographic examinations.

Before the first successful management of cardiac myxoma by Crafoord, in 1954, this histologically benign but potentially fatal lesion was felt to be rare and dangerous.

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The patient, a 28-year-old black man, noted the onset of vague left anterior exertional pain associated with moderate shortness of breath approximately three months prior to admission. Two weeks before hospitalization, the patient noted cramping abdominal pain brought on by similar exertion. All symptoms abated with rest. Examination showed a well-developed black man in no distress with normal vital signs. The precordium was quiet, and there was no cardiomegaly. The $S_1$ was normal, and $S_2$ was split physiologically. There was a grade 1/6 holosystolic murmur over the right parasternal area with radiation to the left. A $S_3$ gallop was heard. There was neither hepatosplenomegaly nor evidence of peripheral embolization.

The hematocrit value was 42 percent, and the erythrocyte sedimentation rate was 8. The upright chest x-ray film showed only right atrial enlargement. The ECG showed peak "P" waves suggesting right atrial enlargement. The cardiac catheterization data showed a mean inferior vena caval pressure of 23 mm Hg. The right atrial and caval angiograms (Fig 1) demonstrated a $4 \times 3 \times 5$ cm bilobed spherical right atrial mass attached to a substantial stalk to the inferior vena cava. During atrial systole, the mass moved into the tricuspid annulus resulting in apparent obstruction. These findings were confirmed on two-dimensional echocardiography.

Removal was elected using cardiopulmonary bypass. Venous return was accomplished by superior vena cava and right femoral vein cannulation. Core cooling to 20° C, aortic occlusion, and cold cardioplegic arrest provided bloodless exposure through a generous right atriotomy. The mass measured $5 \times 10 \times 6$ cm, had a glistening semilucent covering, and was attached to the junction of the anterior-superior junction of the inferior vena cava and the right atrium. The tricuspid anulus was moderately dilated; however, the tricuspid leaflets were intact and valvular insufficiency was not apparent. The mass and its stalk were resected with segment of attached vena cava and the defect bridged by utilizing the redundant right atrial wall. On cutsection, the tumor was glistening, soft, and grey (Fig 2). Microscopic analysis showed numerous capillaries with amorphous stroma compatible with myxoma. Postoperatively, the murmur of tricuspid regurgitation was absent. The patient's hospital course was uneventful.

**DISCUSSION**

Cardiac myxoma can account for approximately 50 percent of all cardiac tumors. Some 75 percent of the myxoma tumors are found in the left atrium, while 25 percent occur on the right. The lesion has been noted in both atria, rarely in the aorta and right ventricle, and has been found as a recurrent tumor in all chambers. No other report of a lesion arising from the inferior vena cava has been encountered. The autopsy incidence is 1 per 1,000 cases, with females affected three times more often than males. The lesion stems from primordial endothelial cells and may present with friable furs or as a round glistening mass attached to the heart by a pedicle of variable length and diameter. The clinical presentation of cardiac myxoma relates to its propensity to embolize, obstruct flow, or cause a variety of physiologic aberrations. Embolization to major systemic or pulmonary arteries or intermittent obstruction of an AV valve provide the more dramatic introductions of the patient. Low grade fever, hemolytic anemia, and weight loss may be other presenting signs. Definitive angiographic and echocardiographic studies have greatly facilitated the diagnosis of these cardiac lesions. They should be employed to define the exact origin or stalk of the tumor, as well as to rule out any abnormality such as bilateral tumors or AV valve injury. Chest roentgenographic and ECG findings are usually of no help in diagnosis.

As in this case, symptoms are sometimes subtle. Nevertheless, surgical extirpation should be carried out in an expeditious fashion to avoid complications stemming from the tumor's location. Though generally safe to remove, an operative mortality as high as 8 percent has been cited. The major complications of surgical removal include embolization at the time of removal and recurrence of the tumor. Removal of the tumor requires gentle manipulation, good exposure, and great care to avoid embolization of fragments. The mass must be
totally excised along with the attachment to the cardiac or vessel wall. After excision, the cardiac chamber should be irrigated and explored carefully prior to closure.* Close followup by serial noninvasive echocardiography is indicated as recurrence should be dealt with early.

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Isolated Mediastinal Mass in Primary Amyloidosis*

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A previously healthy man with a lytic bone lesion of the left talus was found to have a large middle mediastinal mass on routine admission chest roentgenogram. A large amyloid tumor of the mediastinum, representing the sole intrathoracic manifestation of primary amyloidosis, was resected. This presentation of intrathoracic amyloidosis has not previously been reported.

Solitary amyloid deposits in the tracheobronchial tree or pulmonary parenchyma are unusual manifestations of primary amyloidosis. Enlargement of hilar lymph nodes in the absence of pulmonary involvement is extremely rare. We report a case in which a large mediastinal mass was the sole intrathoracic manifestation of primary amyloidosis.

CASE REPORT

A 49-year-old black man complained of pain in the left ankle for several months. Roentgenographic examination revealed a well-defined lytic lesion involving the left talus. He

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