emphasizes the importance of physical examination in patients with unexplained exercise-induced ventricular arrhythmias, in order to elicit clues in the diagnosis of prolapsing mitral valve syndrome. Infective endocarditis prophylaxis as well as antiarrhythmic regimens can then be effectively administered.

REFERENCES

Occlusion of the Left Main Coronary Artery Secondary to Left Ventricular Angioma*

Jorge Oglietti, M.D.; Victor J. Baquero, M.D.; Roberto Lukschenowski, M.D.; Robert D. Leachman, M.D., F.C.C.P.; and Denton A. Cooley, M.D., F.C.C.P.

Our experience with a patient who had an angioma of the anterior wall of the left ventricle that produced complete occlusion of the left main coronary artery is presented. Diagnosis was made before surgery from findings on cineangiographic studies. Successful surgical treatment consisted of a double aortocoronary bypass to the left anterior descending and obtuse marginal coronary arteries. The angioma was left undisturbed.

The cause of most cases of myocardial ischemia can be attributed to coronary arteriosclerosis. Other processes on occasion may produce occlusion of the coronary arteries, eg, congenital aneurysms, emboli, aortic dissection, arteritis, Buerger's disease, amyloidosis, gout, and primary or metastatic tumors. Primary tumors of the heart are uncommon, and even more rare are those that produce occlusion of the coronary arteries. Our experience with a patient who had an angioma of the anterior wall of the left ventricle that caused complete occlusion

Table 1—Results of Preoperative Cardiac Catheterisation

<table>
<thead>
<tr>
<th></th>
<th>Pressure, mm Hg</th>
<th>Oxygen Saturation (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right atrium</td>
<td>8/2-4 (4)</td>
<td>82</td>
</tr>
<tr>
<td>Right ventricle</td>
<td>24/0-4</td>
<td></td>
</tr>
<tr>
<td>Pulmonary artery</td>
<td>24/8 (14)</td>
<td>81</td>
</tr>
<tr>
<td>Pulmonary arterial wedge</td>
<td>16/8 (14)</td>
<td></td>
</tr>
<tr>
<td>Left ventricle</td>
<td>104/0-10</td>
<td></td>
</tr>
<tr>
<td>Aorta</td>
<td>104/72-84 (84)</td>
<td>96</td>
</tr>
</tbody>
</table>

*Values within parentheses are means.

OCCURRENCE OF THE LEFT MAIN CORONARY ARTERY IS PRESENTED. DIAGNOSIS WAS MADE BEFORE SURGERY FROM FINDINGS ON CINEANGIOGRAPHIC STUDIES. SUCCESSFUL SURGICAL TREATMENT CONSISTED OF A DOUBLE AORTOCoronary BYPASS TO THE LEFT ANTERIOR DESCENDING AND OBTUSE MARGINAL CORONARY ARTERIES. THE ANGIOMA WAS LEFT UNDISTURBED.

A 35-year-old man from Athens, Greece was admitted to the Texas Heart Institute on March 10, 1975 for evaluation of precordial pain of six months' duration. The pain radiated to the left axilla and back, occasionally was associated with diaphoresis, occurred mainly at night, and rarely was associated with exertion. There was no history of heart murmur, rheumatic fever, or myocardial infarction.

Physical examination of the patient revealed the pulse to be regular, at a rate of 84 beats per minute, and the blood pressure was 90/70 mm Hg. The jugular venous pressure was normal. The chest was clear to auscultatory percussion. The left ventricular impulse was at the fifth intercostal space, inside the midclavicular line. On auscultation, a grade 1/6 apical systolic murmur could be detected. No other abnormal sounds or murmurs were present. Results of the remainder of the physical examination were normal. The electrocardiogram was normal, and the chest roentgenogram showed evidence of a borderline-sized heart. A discrete bulge in the

![Figure 1. Injection of contrast material into right coronary artery in right anterior oblique position shows visualization of entire left coronary system through multiple collaterals originating from normal dominant right coronary artery.](image-url)
left silhouette below the main pulmonary artery was noted. Results of laboratory studies were within normal limits.

Cardiac catheterization (Table 1) showed normal right and left cardiac pressures and oxygen saturations. The left coronary ostium was never entered during angiographic studies. The entire left coronary system was visualized in retrograde fashion after injection of contrast material into the normal dominant right coronary artery (Fig 1). Figure 2 is a cineangiogram of injection into a conus branch. The large branch emptied into a venous structure in the position of the left coronary artery.

A left ventricular angiogram (Fig 3) in the right anterior oblique position showed a concave deformity of the anterior wall of the left ventricle, with a large space between cavity and left cardiac silhouette, which corresponded to the bulge observed in the plain chest roentgenogram. This space suggested the presence of a tumor.

Surgical treatment of the coronary arterial occlusion was recommended and performed on March 13, 1975. Surgery was performed with the patient under temporary cardiopulmonary bypass using mild hypothermia (30°C, or 86°F) with topical cooling and hemodilution. A median sternotomy incision was made, through which a double aortocoronary bypass to the left anterior descending and obtuse marginal branches was performed using autogenous saphenous-vein grafting. An angioma (6 cm in diameter) which was profusely vascularized and caused protrusion of the epicardium was visualized in the superior-medial aspect of the anterior wall of the left ventricle. The tumor was left undisturbed, and biopsy was not performed because of the benign appearance and a desire to prevent hemorrhage. The patient was easily weaned from cardiopulmonary bypass and tolerated the entire procedure well. The postoperative course was uncomplicated, and there was no evidence of electrocardiographic changes after surgery.

**DISCUSSION**

Most cardiac tumors reported in the literature are metastatic and are the cause of death in 5 percent of all patients who die of cancer. Primary tumors represent less than 1 percent of all cardiac tumors, and 20 percent of these are malignant. Most benign primary tumors are myxomas (50 percent). Angiomas of the heart are uncommon. In a recent review of the world literature, Tabry and co-workers found 35 such cases. The angioma may occur in the epicardium, myocardium, or endocardium. Intramural angiomas were found in the interventricular septum, anterior wall of the ventricles, and atria. Most of the reported angiomas are located in the endocardium, are sessile or pedunculated, are commonly single, and vary from 2 to 3.5 cm in diameter. In our patient the angioma was located in the superior-medial aspect of the anterior wall of the left ventricle, measured 6 cm in diameter, was profusely vascularized, and scarcely protruded into the epicardium.

The clinical picture depends upon the location and size of the angioma. A patient with an angioma in the right atrium usually is asymptomatic; but patients with extensive involvement may experience obstruction of the inflow to the right cardiac chambers, leading to right congestive heart failure. When the angioma is on the right side of the interventricular septum, subvalvular pulmonic stenosis can occur. Atrioventricular block and myocardial infarction have been described accompanying intramural angiomas. Pericardial effusion, hemopericardium, and cardiac tamponade have been reported to occur in patients with angiomas located in the epicardium or pericardium.

Angiosarcomas may produce similar symptoms but locally are more invasive and grow more rapidly. With few exceptions, these malignant tumors arise from the right atrium, frequently spread to the pericardium, and metastasize to the lungs. The clinical picture of angiosarcomas surprisingly is uniform. Chest pain, cardiomegaly, heart failure, and hemopericardium are common features. Hemoptyis and chest films suggesting pulmo-
nary embolization are frequent. A prolonged febrile course with notable elevation of the serum concentration of lactate dehydrogenase accompanying the course of cardiac angiosarcomas also has been described.13

At present, cineangiographic studies are the best diagnostic aids, although echocardiographic examination can be a helpful diagnostic adjunct. Tabry and co-workers3 pointed out that in only one of the reported cases was diagnosis of the angioma determined by angiographic studies. They stressed the importance of a simple blood pool scan in the investigation of paracardiac masses. In the case they described, the noninvasive technique performed with radioactive 99m-technetium-labelled albumin showed radioactivity in the mass involving the wall of the right atrium, indicating the presence of blood within, and contributed to the diagnosis of cavernous hemangioma.

Angiomas of the heart are not always amenable to surgery, and x-ray therapy has been suggested as an alternative method of treatment.3 In our case, surgical removal of the angioma was not performed because of its benign appearance. Double aortocoronary bypass to the left anterior descending and obtuse marginal branches provided adequate revascularization. Biopsy was not attempted in order to prevent future complications. Surgical treatment should be considered only if mechanical complications occur in the future; and then it should be diverted to relieve the obstruction rather than radically remove the tumor.

This case represents another rare form of a nonatherosclerotic obstruction of the coronary arteries. Diagnosis of a tumor of the left ventricle was made before surgery and confirmed at surgery. Double aortocoronary bypass was performed, and the angioma was left undisturbed.

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Surgical Complications of Cervical and Mediastinal Tuberculous Adenitis in an Infant*


An infant whose miliary tuberculosis was resolving after five months of chemotherapy developed a tuberculous cervical lymphatic abscess followed shortly thereafter by life-threatening tracheal compression from enlarged tuberculous mediastinal nodes. Both of these complications required surgical drainage. Chemotherapy alone may be ineffective in the management of lymphadenitis caused by Mycobacterium tuberculosis.

With the advent of effective chemotherapy, it appeared there would be virtually no role for surgery in the control of lymphatic tuberculosis.1 Recently we have had the opportunity to care for an infant infected with Mycobacterium tuberculosis who, despite appropriate chemotherapy, went on to develop two serious complications relating to tuberculous lymphadenitis. A large abscess in the neck had to be drained, and tracheal compression by tuberculous nodes required surgical decompression of the mediastinum shortly thereafter.

CASE REPORT

This child was well until February 1973, when at the age of 11 months she developed the symptoms of fever, cough, and dyspnea. Physical examination at that time revealed a moderately ill child with rales and rhonchi throughout both pulmonary fields. Chest roentgenograms showed a diffuse miliary pattern throughout both pulmonary fields, as well as bilateral hilar and paratracheal adenopathy (Fig 1). A skin test with intermediate-strength purified protein derivative of tuberculin measured 7 mm of induration at 48 hours. A tentative diagnosis of tuberculosis was made; and on Feb 19, 1973, the patient was started on therapy with isoniazid (20 mg/kg), sodium p-aminosalicylic acid (200 mg/kg), strepto-

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