TRAUMATIC metastatic tumors (especially renal) may arise, but the vascular spaces and atypical cells are features of angiosarcoma. The primary bony angiosarcomas may be single or multifocal. Complete surgical removal of the primary lesions should be attempted when feasible, although there is evidence that solitary osseous lesions carry a worse prognosis than multifocal ones. If radical excision fails to cure the primary tumor, irradiation or chemotherapy or both may be tried but are probably only palliative. Death is often due to hemorrhage in the lungs or pleural space from the pulmonary metastases.

ADDENDUM

Since submission of the article it has come to our attention that the following authors have described a patient with cavitary pulmonary metastases from an angiosarcoma of the scalp: Cardozo DW, Claud PL, Chen I, et al: Cystic pulmonary metastasis complicating angiosarcoma of the scalp. Calif Med 105:210-214, 1966.

REFERENCES


Traumatic Thrombosis of Congenital Fistula between Left Coronary Artery and Main Pulmonary Artery*

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This report describes the only documented case of traumatic thrombosis of a congenital fistula between the left anterior descending coronary artery and the main pulmonary artery and subsequent surgery for myocardial revascularization. The patient remains asymptomatic 18 months later.

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THE EMBRYOLOGY AND PHYSIOLOGY OF COMMUNICATIONS BETWEEN THE LEFT ANTERIOR DESCENDING CORONARY ARTERY AND THE PULMONARY ARTERY HAVE BEEN WELL DESCRIBED. The anomaly is rare, occurring only three times in 6,000 selective coronary angiographic studies over an eight-year period at the Cleveland Clinic. Our purpose is to report an unusual case involving traumatic thrombosis of a fistula between the left anterior descending coronary artery and the main pulmonary artery, compromise of blood flow to the anterior myocardium, and subsequent successful surgery with bypass of the left anterior descending coronary artery.

CASE REPORT

A 49-year-old registered nurse at the Veterans Administration Hospital came to the emergency room with substernal pain in the chest and hypotension. She had a history of no cardiac symptoms and a continuous cardiac murmur since birth, but had never had a cardiac evaluation. Five days prior to admission, the patient had suffered a severe kick to the midternal area by an unconscious patient having a convulsion. On the night of admission, the patient was awakened from sleep with severe crushing substernal pain in the chest, nausea, and diaphoresis. She was admitted to the coronary care unit in a semicomatose and hypotensive (blood pressure, 50/0 mm Hg) state. Findings from physical examination were otherwise normal, and no cardiac murmur was identified. A drip infusion of dopamine was started, and the intra-aortic balloon was inserted for cardiac assistance by counterpulsation. The patient's systolic blood pressure rose to 80 mm Hg, she became alert, and her condition seemed to stabilize.

Emergency laboratory studies revealed normal levels of cardiac enzymes, a normal electrocardiogram, and normal levels of the chemical constituents of the blood. An echocardiogram disclosed an abnormal density on the anterior portion of the heart. Emergency cardiac catheterization demonstrated a normal coronary arterial tree and a normal right coronary artery; however, the left coronary arterial system proximally was quite large, with a normal-sized distal left anterior descending coronary artery. The flow of contrast material through this artery was very slow, and proximally, it seemed to contain a thrombus (Fig 1). A ventriculogram

FIGURE 1. Coronary arteriogram demonstrating dilated proximal left anterior descending coronary artery (LAD) containing thrombus and normal-sized distal vessel with diminished blood flow.
showed the left anterior ventricular wall to be hypokinetic.

The tentative diagnosis at this point was rupture and partial thrombosis of a proximal left anterior descending coronary arterial aneurysm, with compromise of blood flow to the distal vessel. The patient was taken to the operating room, where he was carefully examined after cardiopulmonary bypass was instituted. The anterior surface of the heart contained a large thrombosed saccular vessel connecting the proximal left anterior descending coronary artery and the main pulmonary artery. The proximal left anterior descending coronary artery contained a large amount of thrombus but was not completely occluded. The pulmonary artery was opened. The orifice of the fistula measured 0.5 cm in diameter and contained fresh thrombus. The opening in the pulmonary artery was sutured closed, the fistula was ligated in several areas, and the left anterior descending coronary artery was ligated distal to the origin of the fistula. A reversed segment of saphenous vein was placed from the aorta to the distal left anterior descending coronary artery. The patient recovered without complication and remains asymptomatic 18 months after surgery.

**DISCUSSION**

Neufeld et al described the differential diagnosis of a continuous cardiac murmur to include patent ductus arteriosis, aortopulmonary window, ruptured sinus of Valsalva into the right atrium or right ventricle, total anomalous pulmonary venous return to the left innominate vein, pulmonary arteriovenous fistula, ventricular septal defect with aortic insufficiency, supravalvular pulmonic stenosis, congenital absence of the pulmonary valve, and coronary arterial fistula. This patient's lack of symptoms prior to injury, normal ECG, and chest roentgenograms are not unusual for individuals with a fistula between the left anterior descending coronary artery and the pulmonary artery, as changes in these factors depend on the magnitude of the left-to-right shunt. It is apparent that the sharp kick to the anterior portion of the chest was sufficient to cause thrombosis of the fistula and subsequent compromise of blood flow to the anterior myocardium, reducing cardiac performance in spite of a persistent normal ECG. This is the only instance that we can find that documents the traumatic thrombosis of this type of fistula, although other documented complications include aneurysmal dilatation with increasing magnitude of the left-to-right shunt with subacute bacterial endocarditis, rupture with hemopericardium, and myocardial ischemia. The left anterior descending coronary artery was ligated just distal to the origin of the fistula in order to prevent the thrombus from propagating or embolizing distally, and continuity of blood flow was established with a saphenous venous graft from the aorta to the distal left anterior descending coronary artery. The patient remains asymptomatic 18 months after the operation.

**REFERENCES**


**Right Aortic Arch with Isolation of Left Innominate Artery**

*Myung K. Park, M.D.*

A new entity of right aortic arch with isolation of the left innominate artery is described in a three-day-old boy with complete endocardial cushion defect. Embryologically, this type of anomaly will result if the interruption of the embryonic left aortic arch occurs at two sites, one between the left ductus arteriosus and the descending aorta and the other between the ascending aorta and the left common carotid artery. Absence of pulse in the left arm and on the left side of the neck strongly suggests this anomaly. The aortogram and pulmonary arteriogram may confirm the diagnosis of this anomaly during life.

Right aortic arch has been classified into the following three major groups by many authors: (1) with mirror-image branching of the major arteries; (2) with an aberrant left subclavian artery; and (3) with isolation of the left subclavian artery. More recently, Shuford and Sybers have classified right aortic arch into five types, depending upon the location of the interruption in the embryonic left arch of the hypothetic double aortic arch.

A right aortic arch associated with isolation of the left innominate artery has not been recognized as a distinct entity in these earlier classifications. This report describes the association of right aortic arch with isolation of the left innominate artery in a newborn infant and considers the embryologic basis for this rare anomaly of the aortic arch.

**CASE REPORT**

A three-day-old boy was referred to the pediatric cardiology service because of a cardiac murmur and signs of congestive heart failure. Physical examination revealed an acyanotic newborn infant in moderate respiratory distress;