**ROENTGENOGRAM OF THE MONTH**

**JORGE I. MARTINEZ-LOPEZ, M.D., F.C.C.P.*

*From the Louisiana State University School of Medicine.

New Orleans, Louisiana

**THIS 34-YEAR-OLD NEGRO WOMAN** was first hospitalized in October, 1963 for treatment of multiple stab wounds of the arms and chest. She improved under conservative management, consisting of blood transfusions and chest drainage. About a week later, a palpable systolic thrust and a systolic murmur were first observed over the heart. The murmur was softer in inspiration and louder in expiration. The second heart sound showed abnormal “persistent” splitting.
Diagnosis: Traumatic Pseudoaneurysm of the Heart

The chest roentgenogram (Fig. 1) disclosed the presence of a localized bulge which deformed and was inseparable from the contour of the left ventricle. A residual effusion was present in the left pleural sac. Angiocardiographic studies showed contrast medium entering the sac from the left ventricle.

At operation, the left ventricular cavity communicated with the false aneurysmal sac through a defect in the myocardium. Closure of the defect and resection of the sac resulted in disappearance of the systolic thrust and murmur. Postoperatively, the second sound showed physiologic splitting.

Traumatic pseudoaneurysm of the heart is extremely rare, judging from reports in the literature, and may follow blunt trauma to the chest, penetrating wounds of the heart and corrective surgery for congenital or acquired heart disease.1

In general, true and false aneurysms of the heart behave similarly. Therefore, the systemic manifestations, when present, are essentially the same in both types and are secondary to the resultant reduction in stroke volume, cardiac output and arterial blood pressure. A fundamental difference, however, is in the composition of the outer wall of the aneurysmal sac; in pseudoaneurysm, the outer wall is not formed by myocardium, as with true aneurysm, but rather by pericardium, adjacent extracardiac tissue, and hematoma.

Roentgen studies seem to afford the only reliable means of diagnosis, but are of no value in differentiating true from false aneurysms. This distinction is made on the basis of a history of thoracic trauma or cardiac surgery. On fluoroscopy, the characteristic finding is the presence of lateral expansion of the bulging area during the phase of ventricular systole, which may persist through the entire systolic period or occur only during early systole. The behavior of the aneurysmal sac during forced respiration is also characteristic. An increase in prominence of the bulge, due to distention, is observed during forced inspiration; with forced expiration the convexity of the ventricular border is lost owing to compression of the aneurysmal sac. It must be emphasized that lack of systolic expansion in the ventricular bulge does not necessarily exclude an aneurysm. When there is clot within the sac or calcification of the sac, the pulsation may be dampened or completely obliterated. Similarly, failure to opacify the bulging area during cardioangiography may be due to the presence of a thrombus.

The conditions from which a cardiac aneurysm must be differentiated are numerous. These include pulmonary or cardiac tumor; aneurysm of the aorta, coronary vessels, sinus of Valsalva or pulmonary artery; organized intrapericardial clot; pericardial cyst or diverticulum; and loculated pericardial effusion.

The goal of resection of the aneurysm, the treatment of choice, is two-fold. First, resection quickly reverses to normal the hemodynamic alterations occasioned by the sac, which so often lead to intractable congestive failure. Secondly, prompt surgical intervention prevents such complications as rupture and thromboembolic phenomena.

References


For reprints, please write Dr. Martinez-Lopez, 1542 Tulane Avenue, New Orleans 70112.

Readers are invited to submit articles for the Roentgenogram of the Month. Please submit a brief abstract of your case to Benjamin Felson, M.D., Department of Radiology, Cincinnati General Hospital, Cincinnati, Ohio.