

Congenital Aneurysmal Dilatation of the Left Auricle Demonstrated by Sequential Cardiac Blood-Pool Scintiscanning

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Congenital aneurysmal dilatation of the left auricle is a rare condition often associated with cardiac arrhythmias and systemic emboli. The diagnosis is made often by surgical exploration or presurgically by contrast angiography. A case is reported in which the dilated left auricle did not fill during contrast angiography but was demonstrated by sequential cardiac blood-pool scintiscanning.

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Isolated congenital aneurysmal dilatation of the left auricle has been reported only rarely in the literature (1-4). It may be intrapericardial or may involve transpericardial herniation of the left auricle. The diagnosis has usually been made surgically (4), but in several cases it was made preoperatively by contrast angiography (1-5), which showed contrast filling the dilated auricle. Contrast angiography has been advocated as the procedure of choice for the preoperative diagnosis of this condition (2,3). In our case, however, contrast angiography did not show filling of the dilated left auricle, but it was demonstrated by cardiac blood-pool scintiscanning.

CASE REPORT

The patient is a 69-year-old white woman with a history of recurrent rapid supraventricular arrhyth-

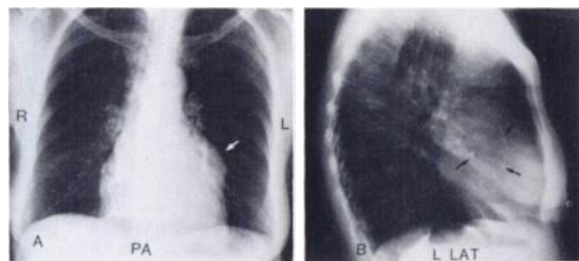


FIG. 1. Anterior view of chest shows marked prominence in region of left auricle (→). (B) Left lateral view of chest shows calcification (→) in region of left auricle.

mias with secondary congestive heart failure since 1974. Since 1974, the patient's chest roentgenograms (Fig. 1A) have revealed marked prominence in the region of the left atrial appendage with some curvilinear calcification in the same region noted on the lateral projection (Fig. 1B). The patient never had a cardiac murmur and roentgenograms of the heart in four views have failed to show significant left-atrial enlargement. The patient was admitted 1 mo before the present admission with an occlusion of the right axillary artery diagnosed clinically. This occlusion was managed medically and responded well. During that admission, an echocardiogram revealed a normal left atrium and no evidence of valvular disease. Cardiac fluoroscopy revealed pulsation of the prominence in the region of the left auricle and calcification near the base of the appendage, which moved in a transverse plane with cardiac contraction. A right-heart catheterization was performed with pulmonary angiography to visualize the left atrium. No valvular disease could be demonstrated. The contrast angiogram (Fig. 2) revealed a slightly enlarged left atrium without filling of the left auricle. Sequential nuclide cardiac blood-pool scintiscanning (Fig. 3) was performed using 15 mCi of [^{99m}Tc] pertechnetate, injected into the left antecubital fossa

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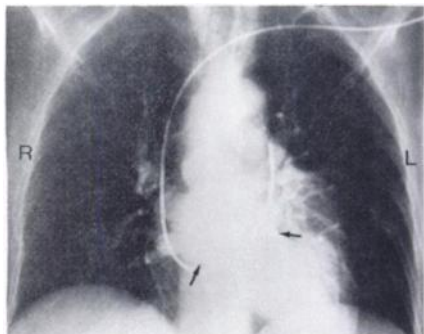


FIG. 2. Left heart phase of pulmonary angiogram shows filling of left atrium (→) but nonfilling of prominence in region of left auricle.

using the tourniquet-quick-release method. Scintiphotos of the cardiac blood pool were taken every 5 sec with 5-sec collection interval. The left-heart phase of this flow study showed activity in the region of the cardiac prominence just to the left of the pulmonary outflow tract, consistent with a dilated left auricle. The patient was discharged on anticoagulants.

One month later, upon the present admission, the patient was admitted from the Emergency Room after the sudden onset of difficulty in speaking and some right-sided body weakness. Physical examination was essentially normal, again without cardiac murmur. Neurologic examination was completely normal and the initial impression was a transitory ischemic attack involving the left middle cerebral artery, secondary to embolus from the left auricle. In order to rule out congenital absence of the pericardium as a cause of left-heart border prominence, a diagnostic pneumothorax was performed on the left side, and there was no evidence of complete or partial absence of the pericardium. One week after admission, cardiac surgery was performed. The pericardium was intact. The patient had a large, dilated left auricle which contained calcified thrombus and fibrothrom-

bus. There was a trace of mitral insufficiency. The aortic valve was competent. The left atrium was opened, the left auricle inverted, and the thrombus removed. A purse-string suture was placed around the base of the left auricle, which was then pulled back into its normal position and the purse string tied. The patient did well postoperatively and was discharged in good condition. Since that time the patient has had no recurrent episodes of emboli or cardiac arrhythmias.

DISCUSSION

Aneurysmal dilatation of the left auricle is a rare congenital condition that occurs either with an intact pericardium or with herniation of the auricle through a pericardial defect (1,2,6,7). The majority of patients with the intrapericardial type have recurrent cardiac arrhythmias, and many of them develop complications from systemic emboli secondary to thrombus within the auricle (2). This patient, with the intrapericardial type, had repeated cardiac arrhythmias leading to congestive heart failure, as well as embolic episodes causing occlusion of the right axillary artery and later transitory cerebral ischemic attacks. Patients with the transpericardial type are usually asymptomatic (2), but strangulation of the herniated auricle can occur (7).

By chest roentgenogram patients with aneurysmal dilatation of the left auricle have a marked prominence in the region of the auricle. The diagnostic difficulty is the determination of whether the prominence relates to the cardiac chambers, or whether it represents a mass within the myocardium or attached to the heart. In addition, one must differentiate between (a) enlargement of the left auricle secondary to mitral valvular disease, and (b) congenital or developmental aneurysmal dilatation of the auricle.

In the present case, the absence of cardiac murmur, absence of mitral-valve calcification at fluo-

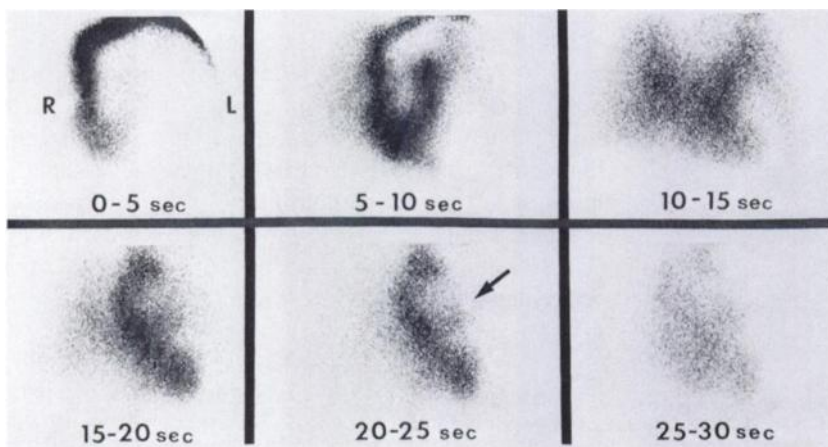


FIG. 3. Left heart phase of sequential ^{99m}Tc -pertechnetate cardiac blood pool scintiscan shows radioactivity in region of left auricle (→) indicating that prominence is an extension of the left atrium and consistent with congenital aneurysmal dilatation of left auricle.

roscopy, and the normal size of the left atrium on four views of the heart argued against mitral-valve disease as the primary cause of the enlarged auricle. Mitral-valve disease was further ruled out by echocardiography and cardiac catheterization.

Differentiation between a cardiac mass and a dilated left auricle was difficult to achieve in this patient. The nature of the prominence could not be established by chest roentgenograms, four views of the heart, echocardiography, fluoroscopy, or contrast angiography. Only the blood pool scintigram (Fig. 3) demonstrated continuity of the prominence with the left atrial chamber and thus demonstrated that the prominence was consistent with a dilated left auricle.

Contrast angiography is considered the procedure of choice for the presurgical diagnosis of aneurysmal dilatation of the left auricle (2,3). This case demonstrates, however, that the auricle may not fill during angiography. There was similar nonfilling at angiography in a case reported by Moraes and associates (4). The cause of nonfilling is probably sludging and clot formation within the auricle.

The reason that the radionuclide cardiac blood pool scintigrams demonstrated the auricle, but not the contrast angiogram, probably relates to the smaller quantity of radionuclide needed to image in comparison to the larger amounts of contrast needed to obtain satisfactory angiographic roentgenograms. Godwin and associates (3) reported the use of an I-131-labeled albumin precordial scan in the preoperative diagnosis of this condition. In Godwin's case, however, a contrast angiogram also demonstrated the dilated auricle.

At this time there is insufficient data to support sequential cardiac blood-pool scintiscanning as the procedure of choice for the diagnosis of congenital aneurysmal dilatation of the left auricle. In the present case, however, it did provide significant diagnostic information when contrast angiography failed to demonstrate filling of the auricle. It is recommended, therefore, that sequential cardiac blood-pool scintiscanning be used in conjunction with other modalities in the diagnosis of this rare congenital condition.

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