We feel that the classification of acute histoplasmosis should be expanded to include cases such as ours and that the term, chronic pulmonary histoplasmosis, should be reserved for those few patients whose infiltrates either do not resolve or do indeed progress into the fibrosing cavitary lesions which imply the need for specific antifungal chemotherapy.

REFERENCES

Echocardiographic Features of an Aneurysm of the Left Sinus of Valsalva

Bert Y. S. Wong, M.D., F.C.C.P.;** Douglas B. Bogart, M.D.; and Marvin I. Dunn, M.D., F.C.C.P.†

The echocardiographic features of an aneurysm of the left sinus of Valsalva are described and correlated with angiographic findings. The echocardiogram showed the presence of a thin line of echoes occurring proximal to the anterior leaflet of the mitral valve and moving in and out of apposition with the posterior aortic wall. During systole, this line of echoes moved away from the aorta into the left atrium, and during diastole, the line moved into the aorta. Recognition of these features provides a potential noninvasive way to diagnose aneurysms of the left sinus of Valsalva prior to rupture.

Aneurysms of the sinuses of Valsalva are usually diagnosed after they have ruptured, when they may be rapidly fatal; however, they can be successfully repaired by surgery. Thus, early diagnosis prior to rupture is important. Recently, the echocardiographic features of aneurysms of the right sinus of Valsalva have been described. This report describes the echocardiographic features of an aneurysm of the left sinus of Valsalva.

CASE REPORT

The patient, a 23-year-old woman with a cardiac murmur known since childhood, had no history of rheumatic fever. Two years ago, cardiac catheterization was performed at another hospital because of pain in the chest. This procedure showed slight elevations in the pressures of the right side of the heart (pulmonary arterial capillary pressure of 25/14 mm Hg [mean, 18 mm Hg] and pulmonary arterial pressure of 40/25 mm Hg) and mild aortic stenosis (left ventricular pressure of 125/10 mm Hg and aortic pressure of 105/65 mm Hg). There was no oximetric evidence of an intracardiac shunt. The left ventricular angiogram showed moderately severe (3+) mitral regurgitation and normal left ventricular contraction. A supravalvular aortogram showed an aneurysm of the left sinus of Valsalva, arising from below the orifice of the left coronary artery. The aneurysm filled in systole, expanding into the left atrium, and emptied in diastole (Fig 1). Coronary arteriograms were normal.

Pertinent physical findings included marked obesity, a blood pressure of 130/80 mm Hg, a pulse rate of 80 beats per minute, and normal carotid and jugular venous pulsations. On cardiac examination the point of maximal impulse was not...

Figure 1. Supravalvular aortograms in left anterior oblique position during diastole (upper) and systole (lower). Aneurysm of left sinus of Valsalva (SVA) originates from below left coronary artery (LC), expands into left atrium during systole, and empties during diastole. AO, Aorta.

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Palpable. There was a systolic thrill at the left sternal border, with a grade 3/6 harsh systolic ejection murmur radiating to the carotid arteries and a grade 2/6 apical pansystolic murmur radiating to the axilla. There were no diastolic murmurs or gallop rhythms. The electrocardiogram and chest x-ray film were normal.

An echocardiogram (Smith-Kline Ekoline 20 with Honeywell Visicorder 1856) showed normal sizes for the left atrial, left ventricular, and right ventricular chambers, normal motions of the mitral valve (both leaflets), and normal motion of the septal wall. On “sweeping” from the left ventricle to the left atrium (Fig 2), the transition from the anterior mitral valve to the posterior aortic wall was noted, and then a thin line of echoes was seen moving in and out of apposition with the posterior aortic wall. In systole, this line of echoes moved posteriorly away from the aortic wall into the left atrium; in diastole, the line of echoes moved anteriorly to the aorta (Fig 3). These movements corresponded to the angiograms in which the aneurysm of the sinus of Valsalva filled with contrast material during systole and emptied during diastole.

**Discussion**

The clinical features of a ruptured aneurysm of the sinus of Valsalva have been described previously. Such aneurysms usually arise from the right or noncoronary cusp and rarely from the left coronary sinus and are often associated with valvular disease. The majority of aneurysms of the sinuses of Valsalva are congenital in origin, although other causes, such as syphilis, bacterial endocarditis, atherosclerosis, and aortic dissection, have been described. The etiology of such aneurysms is not fully defined but is probably related to a weakness at the junction of the aortic media and annulus fibrosus. Clinically, symptoms may be quite variable, ranging from the “typical” sudden onset of dyspnea and pain in the chest to the insidious onset of congestive heart failure. Prior to rupture of the aneurysm, the patients are usually asymptomatic and without diagnostic physical findings. Following rupture the characteristic findings of a collapsing pulse, palpable thrill at the left sternal border, and a continuous murmur are usually present. In two previous cases the aneurysm of the left sinus of Valsalva was believed to interfere with the flow of coronary blood by physically compressing the left coronary artery. Our patient had the findings of aortic stenosis and mitral insufficiency but did not have any evidence of rupture of the aneurysm of the left sinus of Valsalva. Although the anatomic location was similar to the two previously reported cases, there was no evidence that the aneurysm of the sinus of Valsalva inter-
terfered in any way with the flow of coronary blood or with the motion of the mitral valve. Coronary arteriograms were normal, and the motion of the mitral valve was normal by echocardiogram.

The motion of the aneurysm of the left sinus of Valsalva is interesting. Little is known about the hemodynamic behavior of aneurysms of the sinuses of Valsalva prior to rupture. The aneurysm of the left sinus of Valsalva may arise just above or just below the leaflet of the aortic valve.\(^7\) If it arises above the leaflet, the aneurysm will be contiguous with the aorta and expand into the left atrium, a low-pressure chamber. Thus, the aneurysm can fill in systole; however, it should not empty in diastole. Diastolic emptying could occur if left atrial pressure becomes greater than aortic diastolic pressure or if the aneurysm communicates with the left ventricle, in which case the aneurysm would be expected to fill in systole and empty in diastole.

In our patient the aneurysm was visualized with the supravalvular aortogram, indicating an origin above the aortic valve. The aneurysm also filled in systole and emptied in diastole. Since the patient's pulmonary capillary pressure was less than the aortic diastolic pressure, this suggests an additional communication with the left ventricle. This could occur if there were two separate orifices or if the orifice of the aneurysm over rode the valvular leaflet to be contiguous with both the aorta and the left ventricle. The exact anatomic location of the orifice remains to be defined.

The echocardiogram in this case is unique. The aneurysm is easily distinguished from left atrial myxomas, which give a mass of echoes behind the mitral valve.\(^8\) Ruptured chordae tendineae of the mitral valve may cause prolapse of the mitral leaflets into the left atrium, but echocardiographically, this is associated with abnormal amplitude and fluttering of the valvular leaflet.\(^10,11\) The motion of both leaflets was normal in our patient. From a technical standpoint the echocardiogram was damped well enough to show that the line of echoes was composed of distinctly separate echoes from those of the aorta, with a distinctly different movement. The movement was similar to the motion of the mitral valve, but the echoes occurred on a different plane and persisted well above the region of the mitral valve, thus indicating that they were not part of the mitral valvular apparatus itself. Recognition of these features provides a potential noninvasive way in which to diagnose the presence of an aneurysm of the left coronary sinus of Valsalva prior to rupture.

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REFERENCES


Fatal Tension Pneumopericardium Complicating Tracheostomy*

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The findings in a patient who developed a fatal pneumopericardium following tracheostomy are reported. This complication of tracheostomy does not appear to have been reported previously in the literature. When recognized, pneumopericardium is a treatable lesion, and clinicians should be aware of this potential complication.

Iatrogenically induced pneumopericardium has been described following a wide variety of procedures, including thoracocentesis, aspiration of bone marrow, and transthoracic surgical procedures.\(^1\) Pneumopericardium has been reported in an adult after tracheal trauma who was receiving therapy with artificial ventilation;\(^2\) however, it is rare for pneumopericardium to actually cause cardiac tamponade. The majority of reported cases have been in children with respiratory distress syndrome who required high inspiratory pressures for adequate ventilation. We report a case where the unusual complication of pneumopericardium followed a tracheostomy.

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