Rupture of Pericardial Cyst*

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A unique case of spontaneous rupture of a pericardial cyst in a 49-year-old woman with aortic stenosis is reported. Thoracotomy revealed a large deflated pericardial cyst. Etiologic, clinical and roentgenographic features of pericardial cysts are reviewed.

CASE REPORT

A 49-year-old white woman presented with a one and one-half year history of dyspnea upon exertion, paroxysmal nocturnal dyspnea and pedal edema. She denied chest pain, palpitations or syncopal episodes. An intrathoracic mass had been noted at the right cardiophrenic angle on a recent chest film. Physical examination revealed an obese white woman with blood pressure of 190/120 mm Hg, pulse 112 per minute and respiratory rate 30. The cardiac apex was palpable at the sixth intercostal space, 1.5 cm to the right of the anterior axillary line. A left ventricular heave was present. The second heart sound was paradoxically split. A prominent fourth heart sound was present. A grade III/VI systolic ejection murmur was heard maximally over the aortic area which radiated into the carotid arteries. Phonocardiography confirmed these auscultatory findings. Admission chest x-ray film (Fig 1) revealed cardiomegaly and a mass in the mediastinal segment right middle lobe, obscuring the right cardiac margin. Right bronchogram gave normal findings.

The electrocardiogram revealed normal sinus rhythm, left axis deviation and incomplete right bundle branch block.

Cardiac catheterization utilizing the transseptal technique was performed uneventfully. There was a peak systolic gradient of 70 mm Hg across the aortic valve. The aortic valve area was calculated to be 0.61 cm².

The patient was discharged and was readmitted three weeks later for exploratory thoracotomy and possible aortic valve replacement. Admission chest x-ray film prior to surgery revealed complete disappearance of the previously noted right cardiophrenic mass (Fig 2).

Thoracotomy revealed a large, partially deflated cyst with a broad base attachment to the anteroinferior aspect of the right pericardium anterior to the phrenic nerve. The sac contained approximately 40 ml of serosanguineous fluid and was distensible to a diameter of 10 cm. There was a 4 mm perforation between the cyst and the general pericardial cavity with some fibrin lining the margins of the defect (Fig 3). Microscopic examination of the pericardial cyst wall revealed a vascularized fibrous layer lined with mesothelium. The pericardial cyst was widely drained into the right pleural cavity and the communication with the pericardial cavity was left intact. The calcified stenotic aortic valve was replaced with a prosthetic ball valve. The postoperative course was uneventful.

DISCUSSION

To the best of our knowledge, this is the first report of documented rupture of a pericardial cyst. We believe this represents a spontaneous rupture, but cannot defi-
Pericardial cysts and pericardial diverticulae are thought to represent different stages in the same developmental process rather than separate entities.\textsuperscript{1,3} A thin-walled pericardial cyst may arise from a pericardial diverticulum, sealing itself off from the pericardial space by obliterative fibrosis at the site of origin. Conversely, lesions thought to be pericardial cysts may establish a communication through a wide or narrow neck with the pericardial cavity and then be classified as pericardial diverticula.

Pericardial cysts and diverticulae may be either congenital or acquired. Embryologically, the pericardium is a series of mesothelial lacunae which form the definitive pericardial sac. These lacunae sometimes fail to fuse properly, resulting in pericardial cyst formation or this same defect in fusion may provide a congenital weakness of the pericardium resulting in herniation by normal or increased intrapericardial pressure.\textsuperscript{1,3} Acquired pericardial diverticulae secondary to inflammatory pericarditis with pericardial effusion producing herniation has been reported.\textsuperscript{4}

Pericardial cysts and diverticulae are usually asymptomatic. Occasionally they may produce a vague discomfort in the chest or may cause symptoms such as cough, palpitations, dyspnea or repeated respiratory infections.\textsuperscript{1,4,5} Physical examination and auscultation are not helpful in establishing the diagnosis.

The classic roentgenographic picture of a pericardial cyst of diverticulum is a round or ovoid density in the anterior or middle mediastinum adjacent to and blending with the cardiac contour and inseparable from it.\textsuperscript{1,6} Most pericardial cysts and diverticulae are located in either the left or right cardiophrenic angle.\textsuperscript{3} Unusual locations of pericardial cysts and diverticulae such as the superior mediastinum,\textsuperscript{7} at the level of the aortic arch,\textsuperscript{8} and the hilum\textsuperscript{9,10} have been reported. The ability to change size rapidly with position and respiration or to disappear completely is characteristic of a pericardial diverticulum.\textsuperscript{10} Occasionally, these changes may be noted roentgenographically.\textsuperscript{9} Diagnosis cannot usually be positively established without thoracotomy. Instillation of air into the mass under fluoroscopic control or percutaneous insufflation of air into the pericardial cavity has been attempted.\textsuperscript{11} Angiography may be useful to exclude aneurysm or chamber enlargement.\textsuperscript{12}

The differential diagnosis is extensive and includes benign or malignant mediastinal tumors, echinococcal cyst, cardiac or aortic aneurysms, epipericardial fat pad, diaphragmatic hernia, solitary metastatic pulmonary nodule or pleural tumors.\textsuperscript{1,8} Variations of normal such as apical fat pads, rotation of the cardiac shadow and partial absence of the pericardium can be considered.

Pericardial cysts and diverticulae do not undergo inflammatory or malignant change and the prognosis is good. Because of the usual inability to differentiate this diagnosis from life-threatening lesions, exploratory thoracotomy may be indicated.

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\textbf{References}


\textbf{Bacteriology of the Pleural Space in Pneumothorax Simplex*}

\textit{Eugene G. Lafort, M.D.*}

\textbf{Bacteriologic studies of the pleural space in 21 instances of spontaneous pneumothorax failed to demonstrate that any organism is consistently associated with the clinical occurrence of this disease.}

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