LUNG SCAN AND WIDE MEDIASTINUM

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A patient with dissecting aneurysm of the ascending aorta and hemopericardium showed a widened mediastinum on posterior lung scan.

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Since the advent of ^{99m}Tc-labeled macroaggregated albumin and later of ^{99m}Tc-albumin microspheres, perfusion lung scanning has become much more common and probably is the most familiar nuclear medicine procedure performed on an emergency basis. For any patient presenting with sudden chest pain or breathlessness, the clinician likes to rule out the possibility of pulmonary embolism and a lung scan is often requested unless an alternative diagnosis (such as myocardial infarction) is obvious. In this case report we wish to describe an interesting implication of an unusual extrapulmonary finding on a routine perfusion lung image study.

CASE REPORT

On January 27, 1974, an 82-year-old white woman was brought to the emergency room of The Buffalo General Hospital with a history of an acute episode of retrosternal chest pain and breathlessness. The initial clinical impression was of a possible myocardial infarction or pulmonary embolism or both. The patient was admitted to the coronary care unit. The EKG and the serum enzymes were not compatible with myocardial infarction. The x-ray film of the chest (Fig. 1) was interpreted as revealing cardiomegaly and normal left aortic arch that was moderately dilated. The perfusion lung images were performed on Pho/Gamma HP scintillation camera on the anterior, posterior, and both lateral projections following i.v. (2 mCi) administration of ^{99m}Tc-human albumin microspheres. Three-hundred-thousand counts were collected on each view. As seen in Fig. 2, the perfusion lung images demonstrated some irregular perfusion pattern bilaterally (probably due to congestive heart failure) without a definitive segmental perfusion impairment. The entire

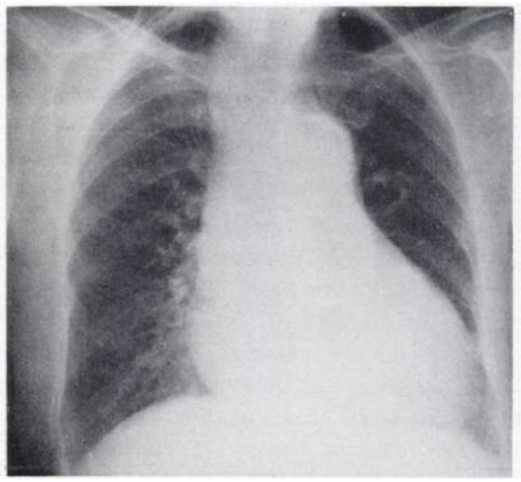

FIG. 1. X-ray film of chest showing wide mediastinum due to aortic aneurysm and cardiac tamponade.

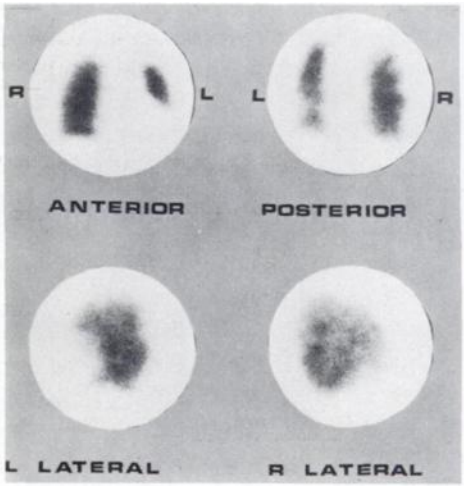

FIG. 2. Perfusion lung images revealing wide mediastinum due to aortic aneurysm and cardiac tamponade.

mediastinum was markedly widened but best shown on the posterior view. This was described appropriately in the official report of the perfusion lung images. The patient's general condition progressively deteriorated and she died within about 36 hr of admission. On autopsy, the following cardiovascular findings were observed as described by the pathologist:

1. Aneurysmal dilatation with medial necrosis of the ascending aorta, extending for 12 cm of its length above the aortic valve with intimal rupture in the anterior aspect and adventitial outer dialysis in the posterior aspect.
2. Dissecting hemorrhage in the arch of the aorta extending up to the root of the great vessels.
3. Hemopericardium (approximately 500 cc) with hemorrhagic suffusions in the atria, pericardium, wall of the esophagus, and adventitia of the descending aorta up to the diaphragm.
4. Moderate-to-severe atherosclerosis of the aorta and coronary arteries.

DISCUSSION

Wide anterior mediastinum (cardiac silhouette) is often seen in the presence of cardiomegaly of any etiology. The superior mediastinum sometimes appears wide with unfolding of the aorta and superior vena cava syndrome. The posterior mediastinum under the previously described conditions is usually unremarkable. In this particular patient's perfusion lung images, however, the entire mediastinum was wide—especially so on the posterior view. We do not wish to conclude that such an abnormality is best demonstrated on the routine lung scans. An optimum radiologic examination of the chest was not possible because of the patient's poor general condition. Under the circumstances, however, the abnormality was shown only on the perfusion lung images and in our experience this was the only incidence of this nature. In addition, we are not aware of a similar case report in the nuclear medicine literature. We wish to point out, therefore, that such an incidental finding in a routine perfusion lung scan should probably be emphasized for uncommon causes of chest pain, for example, dissecting aortic aneurysm resulting in acute cardiac tamponade as in this case.