

UNRESOLVED MAJOR PULMONARY EMBOLISM IMPORTANCE OF FOLLOW-UP LUNG SCAN IN DIAGNOSIS

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ABSTRACT

Unresolved major pulmonary embolism (UMPE) is an uncommon condition which causes pulmonary hypertension, cor pulmonale and death. An accurate and prompt diagnosis of UMPE is very important in the management of such patients with pulmonary embolism.

Follow-up lung scans can lead to earlier diagnosis of UMPE especially on patients who have a history of acute pulmonary embolism in the past and present with pulmonary hypertension, respiratory insufficiency and cor pulmonale.

We report a case of UMPE strongly suggested by follow-up lung scans and subsequently confirmed by pulmonary angiography and post-mortem examination.

Introduction

Usually patients with acute pulmonary embolism have complete clinical, roentgenographic and angiographic resolution of emboli within four to six weeks following an acute event with proper treatment¹⁾.

However, in some patients, acute pulmonary emboli may fail to resolve normally resulting in chronic or unresolved pulmonary embolism²⁾, which is often associated with pulmonary hyper-

tension, respiratory insufficiency, cor pulmonale and death¹⁾. Therefore, early detection of this uncommon disease is very important in successful management of such patients with pulmonary embolism.

The possibility of UMPE should be considered in a patient who has a history of pulmonary emboli in the past and presents with pulmonary hypertension and cor pulmonale. Followup lung scans without an interval change may lead to correct diagnosis of UMPE.

Case Report

A 40-year-old woman was admitted to the hospital because of exertional dyspnea and fever. A chest x-ray performed five months prior to admission at another institution disclosed pulmonary artery enlargement with hilar and mediastinal lymphadenopathy, and an echocardiogram showed right atrial and right ventricular enlargement. Cardiac catheterization done at that time revealed evidence of pulmonary hypertension with no atrial or ventricular septal defects. Unfortunately, pulmonary angiogram was not done at that time. There was no history noted to suggest pulmonary embolism in the past. Physical examination on admission

was significant for tachypnea at rest, jugular venous distention, and loud P2, suggestive of pulmonary hypertension and cor pulmonale. The chest x-ray demonstrated mild cardiomegaly with prominence of the pulmonary artery segment. A venogram showed no acute deep venous thrombosis. Radionuclide pulmonary angiogram reveals patent right pulmonary arterial flow but absent Lt pulmonary arterial flow. (Fig. 1). A lung perfusion scan showed absent

perfusion to the left lung and two segments of the right upper lobe with reduced perfusion of the right middle lobe (Fig. 2). Anticoagulant therapy was subsequently undertaken, and a repeat perfusion scan after ten days of treatment revealed no evidence of improvement. Pulmonary angiography was then performed and disclosed occlusion of the left main pulmonary artery and branches of the right pulmonary artery (Fig. 3). A left pulmonary artery embol-

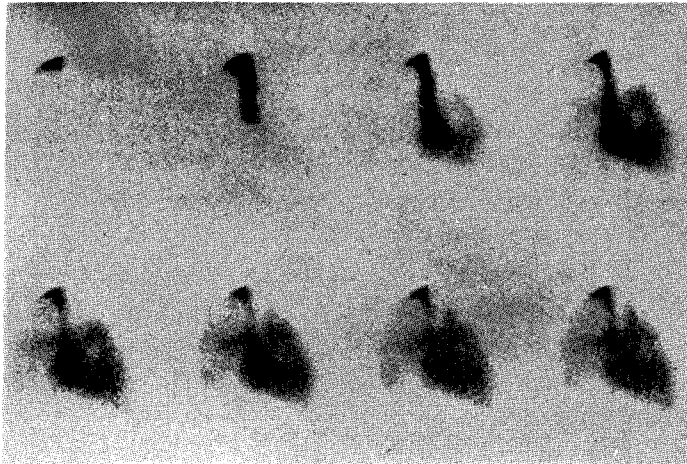


Fig. 1. Radionuclide pulmonary angiogram reveals patent right pulmonary arterial flow but absent left pulmonary arterial flow.

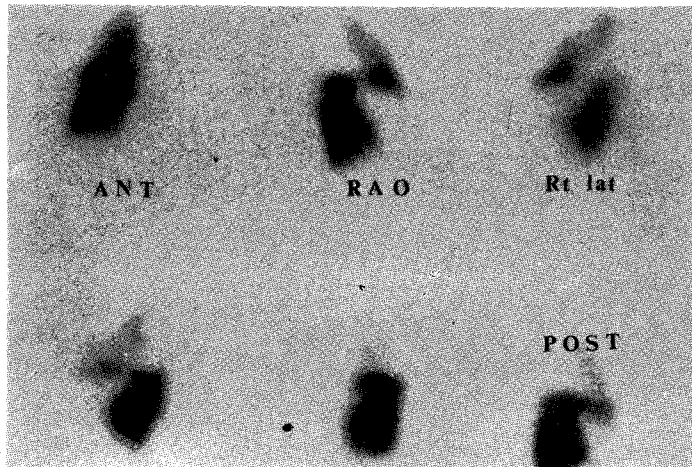


Fig. 2. Lung perfusion scan using Tc-99m MAA shows absent perfusion to the left lung and two segments of the right upper lobe. Reduced perfusion to the right middle lobe is also apparent.

lectomy was attempted, however the patient died intra-operatively. Autopsy findings revealed an organized clot in the left main pulmonary artery with old small clots in the right lung, as well as active sarcoidosis within the hila.

Discussion

The diagnosis of chronic thromboembolic obstruction often has been long delayed due to its uncommon condition and is easily overlooked even if the clues to the presence of pulmonary hypertension or right ventricular dysfunction are present.

A significant number of these patients have no definite history of deep venous thrombosis or pulmonary embolism. Chest x-ray, ECG, and diffusion capacity for carbon monoxide are usually normal or minimally abnormal²⁾. The chest roentgenogram may reveal alteration of the normal distribution of pulmonary vascularity.

It is well known that perfusion and ventilation scans provide a major diagnostic clue to detect pulmonary embolism and pulmonary angiography in conjunction with pressure measurement is the most specific diagnostic procedure of this condition³⁾. Acute pulmonary emboli normally are rapidly resolved, presumably by the body's active fibrinolytic system. Rarely, recurrent episodes of emboli fail to resolve normally and symptoms of pulmonary hypertension develop. It is now widely recognized that in unresolved or chronic pulmonary embolism, medical therapy probably does not affect resolution of the fibrotic adherent emboli and surgical embolectomy has been reported as a means of successful management^{4,5)}.

Thus, early detection of unresolved pulmonary embolism is important in patients who complain of progressive exertional dyspnea and show signs of pulmonary hypertension. To promote early diagnosis, the routine performance of

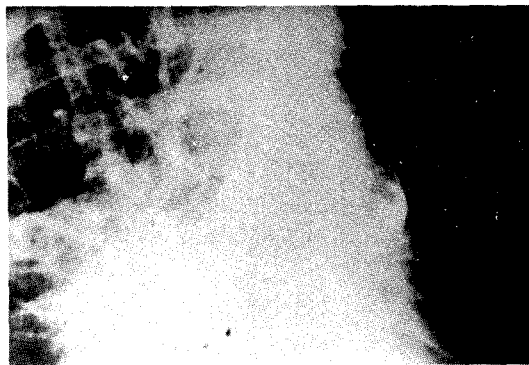


Fig. 3. Pulmonary angiogram reveals occlusion of the left main pulmonary artery and branches of the right pulmonary artery.

follow up perfusion scans among patients who have a major embolic event is necessary. If such scans fail to show resolution, the possibility of unresolved pulmonary embolism is raised and the patient should be followed up closely as a potential candidate for thromboembolectomy.

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