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# Do Recurrent Pulmonary Emboli Lodge Preferentially in Prior Foci?

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**Two cases of recurrent pulmonary embolism are presented: the perfusion lung scintigrams, having been positive on admission, later showed nearly complete restoration of perfusion. However, during the second episode of pulmonary embolism, which occurred several years later, the perfusion defects were located in the same foci as previously.**

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It is known that recurrent pulmonary embolism occurs not only in the elderly bedridden patient—especially if he suffers from serious cardiopulmonary or malignant disease—but also in the apparently healthy, physically active, and, often, young individual (*1*). Guter and Serafini (*2*) stated that instances of embolism must occur in previously obstructed portions of the lung, but they cite no examples and suggest no estimate of their frequency. Similarly Johnson (*3*) stated that serial lung scanning guards against future misdiagnosis: "Should these deficits involve new regions of the lungs, it is highly probable that they represent new emboli, but should they *coincide with previous areas of ischemia it is possible* that they represent nothing more than residual ischemia from earlier emboli that failed to resolve completely."

The following two case reports show that this may not always be so and that the lodging of recurrent pulmonary emboli into previously compromised areas could be more frequent than is suspected.

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## CASE REPORTS

**Case 1.** In April 1975 a fifteen-year-old student presented herself with progressing neurological problems that were due to an epidermoid cystic tumor of the third ventricle. After surgical removal of the tumor, she had a complicated recovery, including deep-vein thrombosis and pulmonary embolism. The chest radiograph was normal, but on May 22 a perfusion lung scan confirmed pulmonary embolism. The right middle lobe, the anterior and lateral segments of the right lower lobe, the lingulae, and the anterior segment of the left lower lobe were without perfusion. (For the defects seen on the lateral views see Fig. 1A.) After appropriate medication she gradually improved and was discharged in June 1975.

In November 1976 a regrowth of the tumor was surgically removed. The postoperative recovery was similar to the previous one, including a clinically diagnosed pulmonary embolism. At that time, no perfusion lung scan was done.

In January 1977 the patient was readmitted because recurrent pulmonary embolism was suspected. A perfusion lung scan was not remarkable except for perfusion defects in the left hilar region and the left lower lobe; these were ascribed to residual ischemia from the previous insult (Fig. 1B).

On March 11, 1979 she came to the emergency ward because

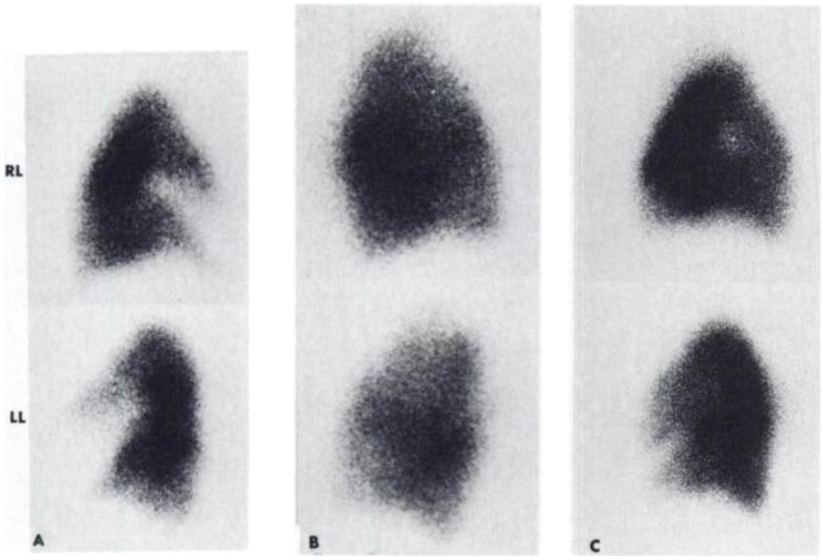


**FIG. 1.** Right (RL) and left (LL) lateral views of perfusion lung scintigrams of Patient 1. For discussion see text. (A) May 22, 1975: perfusion is absent from middle lobe and anterior segment of lower lobe, right; from lingulae; and from anterior and posterior segments of lower lobe, left. (B) Jan. 28, 1977: no perfusion defect present on lateral views. (C) March 13, 1979: perfusion is absent from anterior segment of lower lobe, right, and from inferior lingula and anterior and posterior segments of lower lobe, left.

of acute chest pain. Her left leg was swollen and painful. The chest radiograph was normal. The perfusion lung scan showed no perfusion in the anterior segment of the right upper lobe and in the anterior and posterior segments of the right lower lobe. The inferior lingula and the post segment of the lower lobe on the left were also not perfused. (For the defects seen on the lateral views see Fig. 1C.) A few days later the chest pain was gone, as were the pain and swelling of the leg.

**Case 2.** In March 1976, a 52-year-old insurance agent was admitted to the hospital complaining of sudden onset of difficult breathing and anterior chest pain 4 days after a return flight across Canada. Clinically pulmonary embolism was suspected. His chest radiograph was normal, but the perfusion lung scan showed large defects in both lungs, most of them segmental (Fig. 2A). After Heparin administration, a repeat scan (April 9, 1976) showed nearly complete resolution of these perfusion defects (Fig. 2B), and he was discharged.

On March 12, 1979 he was readmitted because of dyspnea and anterior chest pain. In the interval he had felt well. Clinically, pulmonary embolism was again suspected and confirmed by a perfusion lung scan.

However, the perfusion defects were in the same areas as those seen in 1976 (Fig. 2C). He improved considerably on anticoagulants, and was discharged on March 23, 1979.

## DISCUSSION

After lapses of several years, both patients had lung perfusion defects mainly in the same regions as on the first occasion, although it was obvious from the earlier lung studies that the original defects had largely resolved. The preferential lodging of new emboli into previous foci is very likely if after the restoration of the perfusion the lumen of the vessel remains partially narrowed. Therefore, the interpretation of seemingly old segmental perfusion defects should be done with caution, particularly if the interval between the two studies is quite long.

In patients prone to recurring pulmonary embolism, perfusion lung scintigrams made several months after an episode of pulmonary embolism would provide a useful baseline for the interpretation of possible future studies. If no such scintigrams are available, a ventilation lung scintigram could indicate how recent the perfusion defect is.

My experience with similar cases is too limited to allow an estimate of the frequency of the lodging of recurring pulmonary emboli in previous foci.

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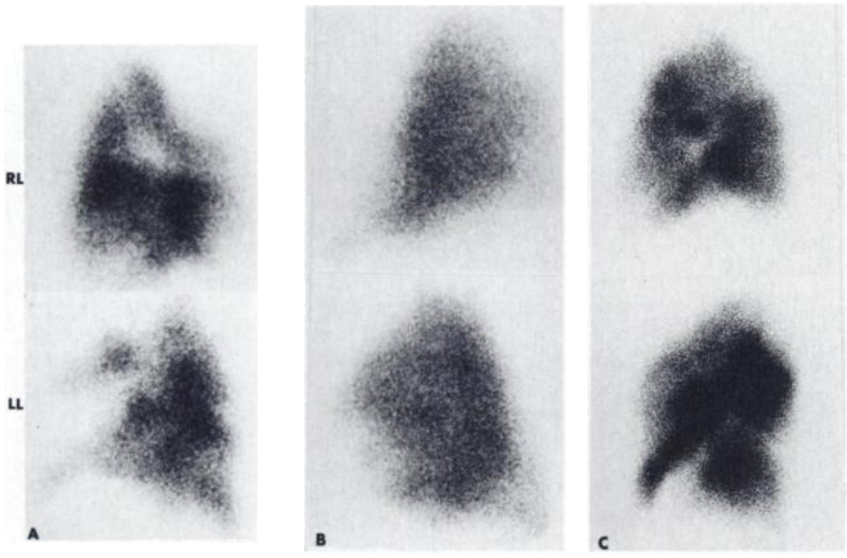


**FIG. 2.** Right (RL) and left (LL) lateral views of perfusion lung scan of Patient 2. For discussion see text. (A) March 29, 1976, (B) April 9, 1976; (C) March 13, 1979.

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