LETTERS TO THE EDITOR

size of the particles is very important, since a preparation that had one LSD (14,000 particles/kg or about 1 million particles per human dose) of 15.8 μ particles will correspond to only 2593 particles of 115 μ diameter, which in turn would result in a completely unsatisfactory, patchy lung scan.

We conclude by saying that the control of the size of the particles is more important from the standpoint of image quality than of toxicity.

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REFERENCE


Localization of Gallium-67 in Aspergilloma

Aspergillomas are cavities in the lung colonized by Aspergillus species, most frequently by A. fumigatus. It is commonly found in lung tissue destroyed by tuberculosis, sarcoidosis, pulmonary infarct, bronchiectasis, lung abscesses, neoplasm, lung cyst, pneumoconiosis, and histoplasmosis (1). The “fungus ball” has a characteristic appearance on chest radiograph and is confirmed by the presence of antibodies to A. fumigatus in serum. Increased concentration of Ga-67 citrate has been reported in a wide variety of pulmonary disorders and this communication reports gallium localization in an aspergilloma.

Eight years before this admission a 58-year-old man was successfully treated for atypical pulmonary tuberculosis caused by Mycobacterium Kansasi. Since admission, a chest radiograph and tomograms revealed a “fungus ball” (Fig. 1), however, tuberculosis was considered inactive. Because of persistent hemoptysis for 1 wk, he was admitted with the possible diagnosis of lung cancer. A gallium scan demonstrated increased concentration of the tracer in the right upper lobe, the same region as the “fungus ball” (Fig. 2). His right upper lobe was resected.

The surgical specimen was dissected, and tissue samples obtained from the “fungus ball,” lining of the cavity, and adjacent normal appearing lung tissue were assayed in gamma well counter. There were 417 cps per gram in the fungus, 215 in the lining of the cavity, and 83 in the normal lung tissue. Histologic examination of the “fungus ball” revealed septated branching hyphae consistent with Aspergillus species, numerous red cells, and a few inflammatory cells.

FIG. 1. Tomography of the right upper lung region demonstrating mycetoma with surrounding crescent of air.

FIG. 2. Posterior Gallium-67 citrate image showing abnormal uptake in the right upper lung field (arrow).

Localization of strontium in aspergillus infection of the lung has been described (3,4) and has been recommended as an aid in the diagnosis of pulmonary aspergilliosis (5). Rohatgi et al reported strontium uptake in other pulmonary disorders, however, and thus strontium is not specific in the diagnosis of aspergilliosis. Since gallium also concentrates in a number of inflammatory diseases, it too is not specific but when increased gallium uptake is observed in a region of infiltrate on the chest radiograph, Aspergillus infection should be included in the differential diagnosis. Gallium studies may be of potential value in localizing extra pulmonary Aspergillus infection such as aspergillus cerebral abscess.

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REFERENCES


Absent Myocardial Uptake of T1-201 under Stress, in Spite of Anatomically Normal Coronary Arteries

This case report demonstrates a marked decrease in thallium-201 myocardial uptake during a severe heart attack of exercise-induced stress in a patient with normal coronary arteries.

A 48-year-old man presented with a 5-year history of progressive angina pectoris. Over the 2-mo period before his hospitalization he developed recurrent episodes of near-syncope, these being associated with angina precipitated by physical and emotional stress.

During stress thallium scintigraphy in a dedicated area within the Nuclear Medicine Department, at Bruce stage II and a heart
rate of 100, there occurred profound chest pain followed by hypotension (BP 60/40) with near-syncope. This was associated with 4-mm ST segment depression in the inferior and anterior lateral precordial leads, persisting for 10 min following exercise. Approximately 30 sec after symptoms began and before the end of exercise, 1.5 mCi of TI-201 were injected through an already established i.v. line. The patient was monitored after exercise for 3 min on the imaging table, and imaging began within 5 min after the thallium injection. Scintiphotos were made in the anterior, 45° left anterior oblique, and 70° left anterior oblique projections. For a total of 200,000 counts taking approximately 3–8 min per view. Data were acquired with a 37-tube portable low-energy mobile camera with a converging collimator and a 20% window centered at approximately 74 keV, and then stored in a computer.

Thallium imaging demonstrated a marked diffuse decrease in perfusion, so pronounced that the myocardium was barely visible over a 30-min period. Equipment, injection site, and positioning were carefully checked to rule out technical errors. The patient was returned to the department at six hours postinjection, at which time normal resting images were obtained (Fig. 1).

The patient was subsequently catheterized, and coronary arteriography failed to demonstrate any significant anatomic coronary artery obstruction. A narrowing of less than 20%, however, was found in the left main coronary artery. The left system was dominant. Because the life-threatening symptoms could not be controlled by medical therapy, coronary reconstruction surgery was performed, with bypass to the left anterior descending and circumflex arteries. Complete elimination of symptoms and ischemic ECG abnormalities resulted, as demonstrated by subsequent exercise testing at 4 and 12 mo following surgery.

DISCUSSION

The clinical course of this patient with no critical anatomic lesion led us to the belief that spasm of the left main coronary artery was the cause of his episodes of angina. At surgery, absence of a significant anatomic obstruction was confirmed by easily passing a No. 3 Fogarty catheter from an incision in the left anterior descending artery retrograde through the left main coronary artery and left coronary ostium. In addition, the excellent response to coronary reconstruction supports our initial impression that he was suffering from localized spasm of a dominant left main coronary artery.

The concept that coronary artery spasm may present as classical angina has been discussed recently by Wiener and associates (1). Of their 29 cases of documented coronary artery spasm, 16 had typical exercise-precipitated angina with associated ischemic ST segment changes on ECG. Hypotension during ischemic episodes was frequent in their series, and was also seen in our patient.

Previous reports by Maseri and coworkers (2,3) have described profound transient reduction in myocardial blood flow during episodes of coronary artery spasm. In our case the actual mechanism responsible for the decreased coronary blood flow, and the prolonged absence of myocardial TI-201 uptake, was probably the combination of a 10-min episode of coronary spasm in a dominant left main coronary artery, coupled with hypotension. A primary inability of the myocardial cell to concentrate TI-201 cannot be totally excluded, but alleviation of symptoms following coronary reconstruction with the absence of ischemic changes on followup stress test make this an unlikely possibility.

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Follow-up on Case of Hemangioma of Liver Treated by Irradiation

In December 1971 we reported in this journal a case of hemangioma of the liver (1). There were two interesting aspects to the case: a) the use of double scanning (Au-198 and IASA) to establish the diagnosis, and b) the patient was 3–3/2 yr after irradiation therapy and appeared to have been cured. In that report we noted that surgical excision is the preferred treatment of clinically significant hemangioma but at that time it carried an unacceptably high morality risk. The possibility that our patient was cured was enhanced over the following 6 yr by frequent clinical evaluation, liver function studies, and liver-spleen scans.

In April of 1978 she experienced a reoccurrence of her original symptoms: bitter taste, indigestion, distension, and gaseousness. In 1965 she had complained of discomfort in the right upper abdominal quadrant. She now complained of severe constant "gnawing" pain in the region of the right scapula. The liver function tests were normal. The liver-spleen scan indicated a

FIG. 1. Almost complete absence of myocardial activity under stress, with normal resting redistribution 6 hr later.