

**RAPID HEART POOL SCANNING**

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Institutions which lack a broad AEC license and are prohibited from using  $^{99m}\text{Tc}$ -albumin or other radiopharmaceuticals for heart pool scanning may benefit from the use of  $^{99m}\text{Tc}$ -sulfur colloid.

A satisfactory heart pool scan for the demonstration of pericardial effusions can be obtained with the scintillation camera using  $^{99m}\text{Tc}$ -sulfur colloid.

The patient studied by this method was referred to our department 7 days after admission. The following history and hospital course was obtained:

16-year-old Caucasian female

Admission diagnosis: Pneumonia

Chief complaint: Essentially dry cough becoming productive of a white sputum

Temperature: 104°F for 3 days

Anterior chest pain associated with shortness of breath

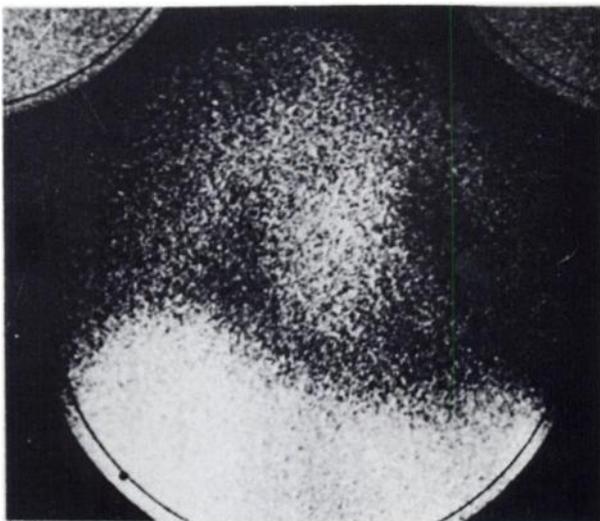
White count on admission: 11,800/cm<sup>3</sup>

Admission chest x-ray: Left lingula infiltrate.

Heart within normal limits.



**FIG. 1.** Scintiscans show rapid flow of  $^{99m}\text{Tc}$ -sulfur colloid into left and right heart chambers.



**FIG. 2.** Shows lack of blood flow surrounding cardiac blood pool which is characteristic of pericardial effusion.

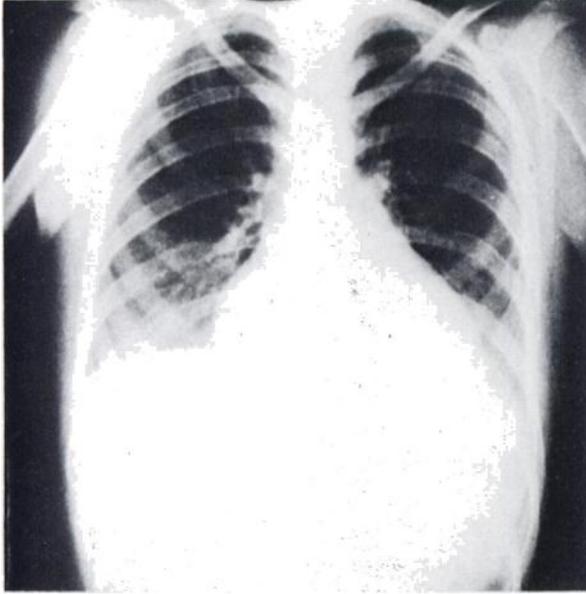
Because of the age of this patient,  $^{131}\text{I}$ -cholografin was not the agent of choice. The ready availability of  $^{99m}\text{Tc}$ -sulfur colloid, which has a short half-life and low radiation exposure, suggested its own use. Since the particle size of the colloid preparation should not exceed 1.0 micron, no pulmonary block-age should occur.

**TECHNIQUE**

The patient is placed in a supine position under the scintillation camera so that the detector is centered over the mediastinum; care is taken to include

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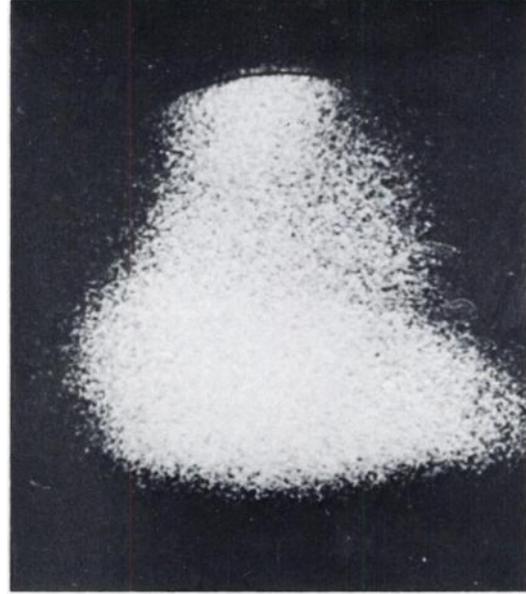
**FIG. 3.** X-ray taken 1 day before heart pool scan. Note cardiac enlargement.

the diaphragm and mid-epigastric areas.

Three millicuries of  $^{99m}\text{Tc}$ -sulfur colloid is injected intravenously, and rapid sequential scintiphotos are taken immediately postinjection at 4.0-sec intervals.

With the aid of a persistence scope, one can observe the blood flow into the left and right heart chambers. Prolonged exposures of the same area are taken as soon as possible to outline the lung, liver and heart pool circulation. It is suggested that the delayed exposures be taken with an accumulation of 200,000–300,000 counts.

Technetium-99m sulfur colloid, which is now



**FIG. 4.** Delayed view of liver demonstrating hepatomegaly, made with  $^{99m}\text{Tc}$ -sulfur colloid.

available in kit form or as a prepackaged radiopharmaceutical, can be used for heart pool scanning and has the additional advantage that the liver is better visualized than with agents which circulate without hepatic accumulation.

Figure 1 demonstrates the rapid flow of the colloid into the left and right heart chambers. Figure 2 shows the lack of blood flow surrounding the cardiac blood pool, which is characteristic of a pericardial effusion. Figure 3 is x-ray taken one day prior to the heart pool scan. Note cardiac enlargement. Figure 4 is delayed view of the liver demonstrating hepatomegaly.