

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 Tl-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 5–8 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 Tl-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 Tl-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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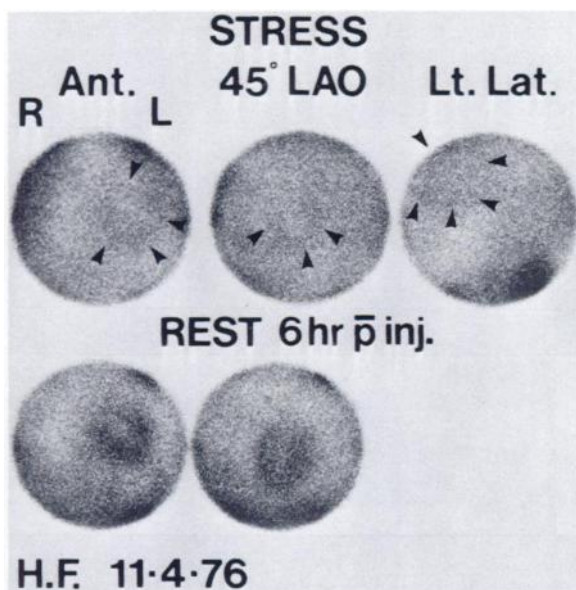


FIG. 1. Almost complete absence of myocardial activity under stress, with normal resting redistribution 6 hr later.

#### 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 3-1/2 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 mortality 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 recurrence 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

lesion in the right lobe of the liver at the site of the previous hemangioma. A transmission computerized tomographic scan of that area confirmed the presence of a hemangioma in the right lobe and probably a small one in the left lobe. Several consultants agreed that the patient had received maximum radiation therapy and that further irradiation would be dangerous.

Embolization treatment was attempted but because of technical problems the tip of the catheter could not be properly positioned. However, the angiograms confirmed a large hemangiomatous lesion in the right lobe of the liver as well as one within the left lobe. The splenic and portal veins were patent.

On Oct. 4, 1978, the patient underwent surgery at the UCLA Medical Center. A large hemangioma (950 g) was removed from the right lobe of the liver and a smaller one from the left lobe. It was the surgeon's opinion that he had completely removed both lesions.

The patient has had an uneventful recovery. She was hospitalized for 3 wk and is now living her normal life. She is symptom-free and her liver function is normal.

The purpose of this follow-up report is to point out that irradiation of a symptomatic hemangioma of the liver did result in the patient's going 9 yr with an apparent cure, but it confirms that in proper hands the preferred treatment is surgical. In retrospect, one might conclude that the patient should have had surgical intervention 13 yr earlier when she was only 46 years old. However, since there have been tremendous advances in liver surgery during the intervening period, the sequence of therapeutic procedures was very successful for this patient.

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### Abnormal Gallium-67 Image of the Abdomen in Starch Granulomatous Disease

Gallium imaging has proven useful in uncovering spontaneously occurring acute and chronic inflammatory diseases (1). Perhaps of even more significance is the use of gallium in postoperative patients where surgically induced abscesses are suspected.

We report on a patient who developed signs of an intra-abdominal mass following two abdominal surgical procedures and who had an abnormal gallium-67 image.



FIG. 1. Anterior torso view 48 hr following injection of Ga-67 citrate shows uptake in right lower quadrant.



FIG. 2. Anterior abdominal view 72 hr following injection of Ga-67 shows persistent uptake in right lower quadrant.

A 68-year-old white woman with symptoms of progressive intestinal obstruction for 5 wk presented with a firm, large (12 × 6 cm), left lower-quadrant mass. On proctoscopic examination, a mass obstructing the lumen was seen at 12.5 cm. Frozen section proved it to be an adenocarcinoma of the rectum, and an anterior resectosigmoid resection with end-to-end anastomosis was performed. On the third and fourth postoperative days, the patient developed a septicemia and a pelvic abscess that required incision and drainage, with the removal of 500 cc of pus. Gram stain and culture showed mixed flora, including anaerobes. Twenty-four hours later, the patient again had signs of an acute abdomen with associated hypotension. At exploration, generalized fecal peritonitis was found. A colostomy was done, with peritoneal and intestinal lavage and debridement of the inflammatory exudate. The patient did well until the fifth postoperative day, when she developed a temperature of 102°F. Although she continued to feel well, her WBC count rose to 25,000. On the 9th postoperative day, ultrasonography revealed a right-abdominal fluid mass.

The gallium image (Fig. 1) at 48 hr after injection revealed a large area of abnormal uptake in the right lower quadrant, which persisted for 72 hr (Fig. 2). A subsequent exploratory laparotomy showed only focally thickened omentum. Histologic examination of the biopsied omentum contained fibrofatty tissue with moderate numbers of lymphocytes, rare leucocytes, and occasional foreign-body giant cells containing ovoid and partly fragmented particles, 10–20 μ in diameter, which stained light blue with hematoxylin-eosin stain (Fig. 3). A maltese cross was easily seen with polarized light (Fig. 4). Eight days following the last surgery, the patient was discharged.

In 1933, Antopol (2) first reported cases of postoperative granulomata after the use of dusting powder consisting of lycopodium spores—or a mixture of lycopodium spores and talc (magnesium silicate granules)—on surgical gloves. Because of this finding

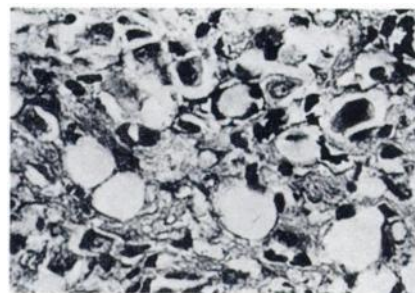


FIG. 3. Biopsy specimen from thickened omentum shows foreign-body giant cell containing ovoid particle (upper center).