

SPLENOSIS DEMONSTRATED BY SPLENIC SCAN

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Splenosis is the autotransplantation of splenic tissue following spleen trauma. Although the first case was described in the German literature as early as 1896 (1) and introduced into the English literature in 1939 (2), splenosis has not proven to have a characteristic clinical picture. In the past there has not been a suitable diagnostic method, and the symptoms, when present, have been mild. Therefore diagnosis has usually been made at laparotomy. The case reported here illustrates that splenic scanning is a suitable method for the preoperative diagnosis of splenosis.

CASE REPORT

Following a motorcycle accident, a 21-year-old male was hospitalized complaining of left shoulder and pelvic pain. Because of spasm and rebound tenderness in the left upper quadrant of the abdomen, he had exploratory laparotomy on the third day of hospitalization. A slightly enlarged spleen with multiple lacerations was removed. He was well for 3 years after this operation; then he suddenly developed severe abdominal discomfort. He was hospitalized and during the next 3 days developed clinical evidence of a bowel obstruction; plain film of the abdomen revealed dilated loops of bowel. Complete blood count and peripheral blood smear were normal. An exploratory laparotomy revealed a bowel obstruction secondary to adhesions. Multiple purple nodules were scattered over the omentum, small bowel, and mesentery (Fig. 1). These varied from a few mm to 3 cm in diameter. Several were biopsied and found to have histological morphology typical of splenic tissue (Fig. 2). Postoperatively, a splenic scan was obtained with 4 mCi of ^{99m}Tc -sulfur colloid (Figs. 3 and 4). In addition to the uptake of the radionuclide by the liver, there were multiple small areas of the radionuclide distributed in the abdomen corresponding to the sites of splenic tissue seen at surgery.

DISCUSSION

In normal or abnormal locations splenic tissue cannot be evaluated well by physical examination. For this reason, visualization of the spleen by radionuclide scanning has become a useful diagnostic tool. There are two basic methods: the intravenous injection of radioactive colloidal particles of 0.2–1 micron in size or the intravenous injection of radioactive-labeled erythrocytes modified by heating or chemicals. Both methods are dependent upon the phagocytic

Received Jan. 18, 1971; revision accepted March 8, 1971.

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FIG. 1. Photograph obtained at laparotomy. Multiple splenic nodules are in omentum.

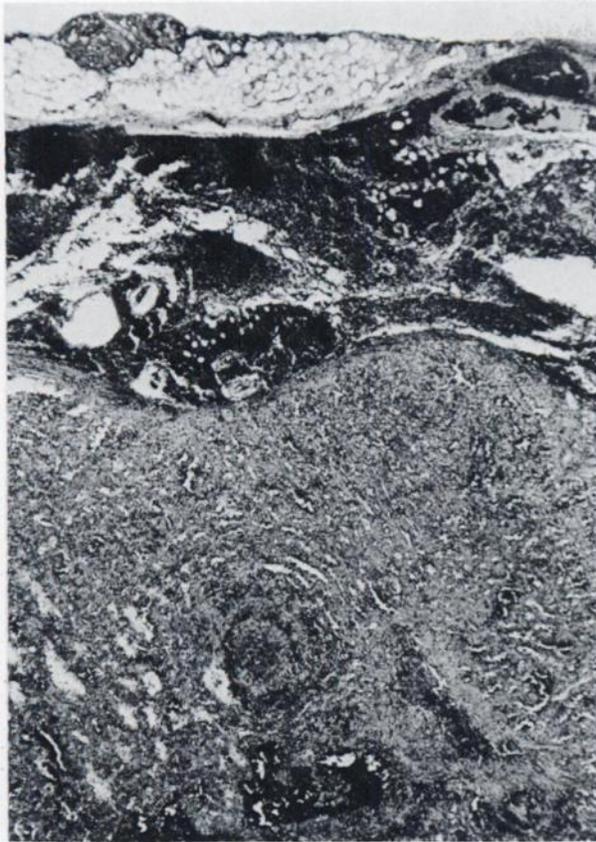


FIG. 2. Photomicrograph of omental nodule biopsied at laparotomy. Histology shows lymphoid follicles which are compatible with splenic tissue. (Hematoxylin and eosin stain $\times 23$.)

function of splenic tissue although the erythrocytes are more specifically localized by splenic tissue. Technetium-99m-sulfur colloid, made by the method described by Patton (3), was used in this case. As demonstrated, even small areas of functioning ectopic splenic tissue can be visualized by a splenic scan obtained after injection of the radioactive colloid. This is particularly true if the liver and any large area of splenic tissue are not included in the area of the scan, or if these more radioactive areas are "burned out" to detect the less active areas (Fig. 4).

Peritoneal splenosis has been mistaken for tumor of the stomach (4), metastatic carcinoma, endometriosis (5,6), and angiomata of the bowel wall. Splenosis of the thoracic cavity in two reported cases has simulated intrathoracic neoplasm (7). Splenosis may be differentiated from simple accessory spleens because the latter follow the pattern of embryological development, and therefore, are located along the hilar and pedicle regions of the spleen and the retroperitoneum: They are always on the left side and are supplied by branches of the splenic artery entering the hilum. The presence of the transplanted tissue of splenosis has been linked to recurrent thrombocytopenia purpura following splenectomy as well as to vague intra-abdominal complaints attributed to the gross and microscopic hemorrhage and infarction seen in some pathology specimens from this condition.

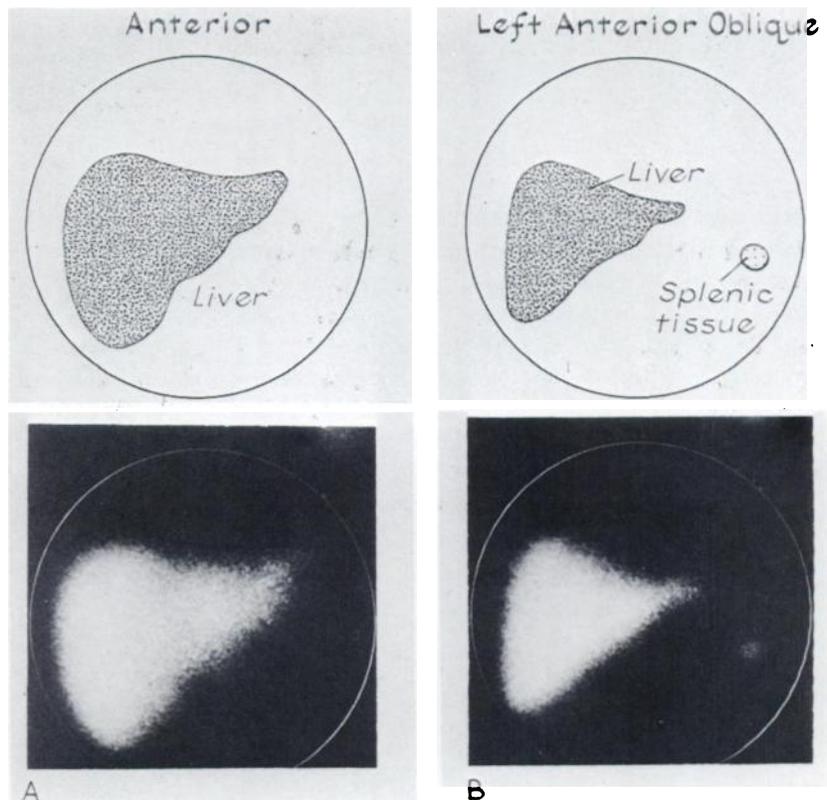


FIG. 3. Technetium-99m-sulfur colloid scan obtained with scintillation camera (400,000 counts with oscilloscopic intensity of 572). A is anterior view of abdomen showing normal liver. B is left anterior oblique view of abdomen showing normal liver and barely visible nodule of splenic tissue.

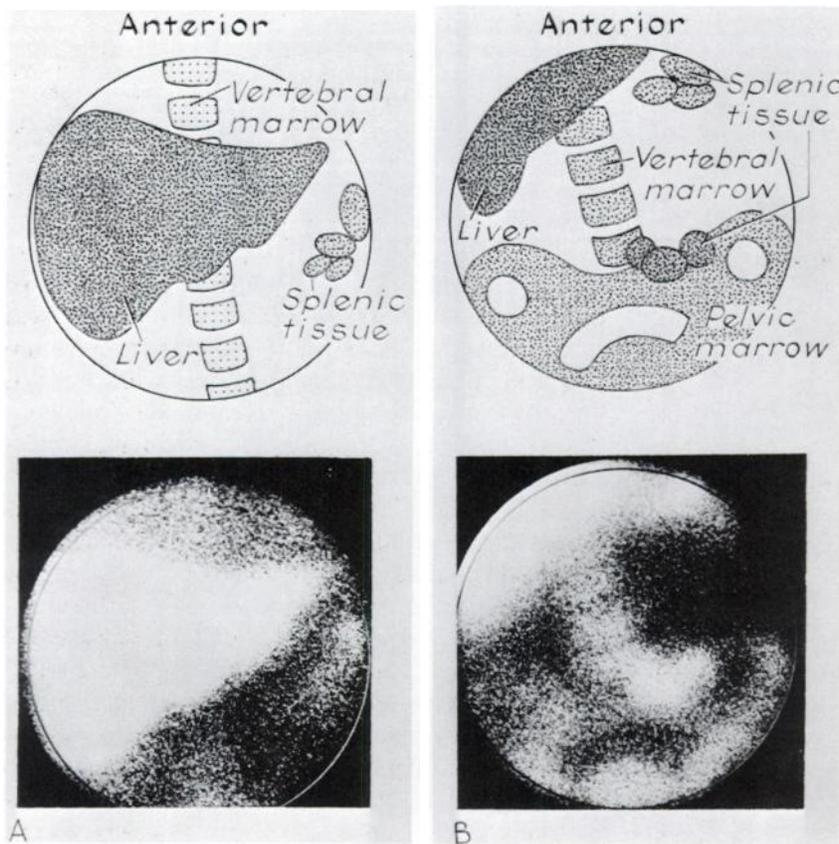


FIG. 4. Technetium-99m-sulfur colloid scan obtained with scintillation camera (400,000 counts with oscilloscopic intensity increased to 620). A is anterior view of abdomen showing normal liver, multiple splenic nodules and slight marrow uptake. B is anterior view of lower abdomen and pelvis which better visualizes multiple splenic nodules and marrow uptake because liver does not contribute as much to accumulated counts.

In cases in which abdominal trauma has occurred in the past, with or without splenectomy, abdominal or thoracic splenosis is a reasonable part of the differential diagnosis of intra-abdominal mass lesions. Depending on the size of a mass and its location, the splenic scan may confirm or rule out this diagnosis.

SUMMARY

Splenosis is the autotransplantation of splenic tissue following spleen trauma. It may result in vague symptoms and abdominal masses and must be considered when abdominal trauma has occurred in the past. The splenic scan is a suitable method for the preoperative diagnosis of splenosis because radioactive colloidal particles or damaged erythrocytes are localized in all functioning splenic tissue. Prior to the advent of the splenic scan, the diagnosis of splenosis was established by laparotomy.

ACKNOWLEDGMENT

This work was supported in part by Stanford Hematology Division Training Grant T1 AM 5239-11.

REFERENCES

1. ALBRECHT H: *Ein Fall von sehr Zahlreichen über ganze Peritoneum versprengten nebenmilzen.* *Beitr Path Anat* 20: 513-527, 1896
2. BUCHBINDER JH, LIPKOFF CJ: Splenosis: multiple peritoneal splenic implants following abdominal injury. *Surgery* 6: 927-934, 1939
3. PATTON DD, GARCIA EN, WEBBER MM: Simplified preparation of technetium 99m sulfide colloid for liver scanning. *Amer J Roentgen* 97: 880-885, 1966
4. FRONT RG, SPARKS RD, HERBERT GA: Ectopic spleen mimicking an intrinsic fundal lesion of the stomach. *Amer J Dig Dis* 15: 49-56, 1970
5. AMSTEY MS, FULLERTON RE: Splenosis in gynecologic surgery. *Obstet Gynec* 26: 653-655, 1965
6. HARTMAN JW: Splenosis: autotransplantation of splenic tissue. *Stanford Med Bull* 11: 162-169, 1953
7. AHMADI A, PENFIELD FABER LT, MILLOY F, et al: Intrathoracic splenosis. *J Thorac Cardiovasc Surg* 55: 677-681, 1968