

CHANGES IN LIVER SCAN FOLLOWING SPLENECTOMY

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Changes in liver shape, position, and uptake of colloid have been noted by us in liver scans in patients following splenectomy. These changes have resulted in confusion in interpretation. Four cases are described to illustrate some of the possible misinterpretations. These include migration of the left lobe of the liver into the left upper quadrant mimicking residual or accessory spleen, mass lesion in the region of the porta hepatis, or recurrent foci of disease.

Previous reviews have demonstrated the widespread acceptance of the liver scan in evaluation of hepatic disease (1-4). As a noninvasive technique, its usefulness in delineating organ size, shape, and position as well as in detecting focal space-occupying lesions and in confirming diffuse parenchymal processes has been well described (5). Recently we have noted changes in liver configuration and uptake of labeled colloid in patients following splenectomy. In some instances, this has led to erroneous interpretation of accessory spleen, residual spleen, or focal defects in the region of the porta hepatis. The following illustrative case reports are offered to alert the physicians to such changes in order to avoid false-positive interpretations.

CASE REPORTS

Case 1. A 30-year-old white man was diagnosed as Stage IIB Hodgkin's disease and underwent a staging laparotomy with splenectomy in January 1972. Liver imaging with ^{99m}Tc -labeled sulfur colloid showed postoperative changes with an elongated left lobe which simulated an accessory or residual spleen (Fig. 1). Preoperative scan was not available for comparison. However, comparison of liver scan at 9 months and at 29 months after splenectomy showed further elongation and migration of the left lobe of the liver into the left upper quadrant with accentuation of the division between right and left lobes in the region of the porta hepatis. Left anterior

oblique views and rotation of the detector head indicated the region of radioactivity to be anterior and contiguous with the liver image.

Case 2. A 77-year-old white man underwent a total colectomy and splenectomy for adenocarcinoma of the descending colon in 1971. A preoperative liver study is compared with imaging done 2 years following splenectomy (Fig. 2). An extrinsic mass in the region of the porta hepatis on the postoperative study is suggested since the hepatic defect was not seen preoperatively. Recurrent disease was not detected clinically or by liver biopsy and no mass was palpable in this region.

Case 3. A 29-year-old white man underwent splenectomy for Stage III Hodgkin's disease. Pre- and postoperative scans show enlargement of the left lobe and accentuation of the division between the right

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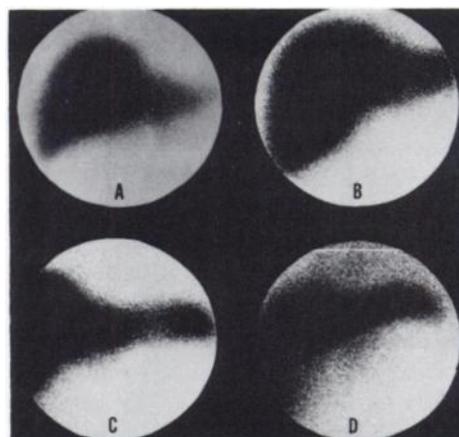


FIG. 1. Postoperative scans in Case 1 performed at 9 months (A) and 29 months (B-D), showing elongation and migration of left lobe into left upper quadrant, mimicking residual or accessory spleen.

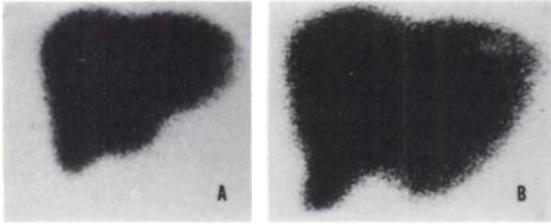


FIG. 2. Preoperative (A) and postoperative (B) scans in Case 2 showing enlargement of left lobe and questionable defect at junction of right and left lobes on postoperative scan. Preoperative scan was thought to be normal.

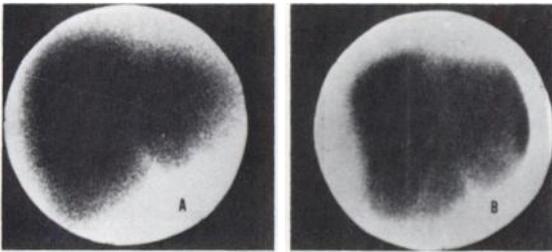


FIG. 3. Preoperative (A) and postoperative (B) scans in Case 3 showing enlargement of left lobe and accentuation of division between right and left lobes in scan done 3 months after splenectomy.



FIG. 4. Postoperative scan in Case 4 showing midline liver with much of left lobe occupying left upper quadrant. Preoperative scan was not available for comparison but shape and location of liver on postoperative scan was thought to be secondary to surgery.

and left lobes of the liver in the images done 3 months after the splenectomy (Fig. 3). This raised the clinical question of recurrent lymphoma. Followup examination and repeat biopsies failed to diagnose recurrent disease.

Case 4. A 68-year-old white man had a left hemicolectomy and splenectomy for adenocarcinoma of the descending colon in August 1973. Liver scan showed enlargement of the left lobe of the liver and accentuation of the normal division between right and left lobes suggesting a defect at the porta hepatis. The liver shape resembled a midline liver with much of the liver in the left upper quadrant due to migration of the left lobe (Fig. 4). Although preoperative scan was not available for comparison, the shape and location of the liver on postoperative scan was

thought to be secondary to surgery. Liver function was normal.

DISCUSSION

Following splenectomy, the liver can change its position and shape. Migration of the left lobe of the liver into the splenic bed in the left upper quadrant is often seen by surgeons immediately after removal of the spleen. This process may depend on many factors including liver pliability, obesity, age of the patient, or the previous existence of splenomegaly and its duration. This is demonstrated in Case 1 and can give rise to misinterpretation of residual or accessory spleen. Movement of the liver into the left upper quadrant is accomplished by a widening of the normal division between the right and left lobes (Cases 1-3), giving the impression of a filling defect in the area of the porta hepatis. Although other possibilities such as postoperative thrombosis of the portal vein or decreased blood flow or both in the region of the porta hepatis could explain similar defects, they seem much less likely.

Removal of the spleen in a patient with an elongated, thin left lobe of the liver may also be misinterpreted. This may be caused by accentuation of the left lobe appearance resulting from the lack of splenic uptake of radionuclide or by migration of the left lobe into the left upper quadrant (Case 1). Other studies may be helpful clinically to identify splenic tissues such as imaging with heat-damaged ^{51}Cr -red blood cells or liver imaging with ^{131}I -rose bengal in selected cases.

It is possible that changes other than those we described in liver shape and uptake of colloid which have contributed to false-positive interpretation of liver scans following splenectomy may have already been observed by other physicians. This communication will serve to alert the reader to these possibilities.

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