

the normal spleen that can include notching, septation, and one or more accessory spleens. Notches of the spleen occur superiorly (80–100%), inferiorly (30–60%), and anteriorly (3–15%) (4), but rarely posterior or on the diaphragmatic surface. Notching, per se (4), does not result in change of the normal orientation of the splenic hilus, which is directed inframedially; however, if the spleen rotates on its horizontal anteroposterior axis, then the hilum points superiorly toward the diaphragm and faces the fundus and upper body of the stomach. Since the splenic anlage develops in the dorsal mesogastrium adjacent to the posterior or greater curvature of the stomach, the gastric fundus would occupy the large superior splenic cleft. This point was clearly demonstrated by the combined gastric-splenic scan. The major advantage of recognizing this variation by means of the combined gastric and liver-spleen scans is to differentiate it from serious conditions, or to recommend further investigations such as contrast arteriography.

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REFERENCES

1. FREEMAN MH, TONKIN AK: Focal splenic defects. *Radiology* 121: 689–692, 1976
2. FREEMAN LM, JOHNSON PM: *Clinical Scintillation Imaging*. New York, Grune & Stratton, p 666.
3. SMIDT KP: Splenic scintigraphy: A large congenital fissure mimicking splenic hematoma. *Radiology* 122: 169, 1977
4. WESCOTT JL, DRUFKY EL: The upside-down spleen. *Radiology* 105: 517–521, 1972

"Small Spleen" Due to Liquefied Hematoma

While splenomegaly is an alerting sign for further investigation of that organ, the "small" spleen may also indicate disease. By "small" we mean one having a functional (scan) length of more than 2 standard deviations below the median value found in the population. Because of this, we report the size of the spleen on liver-spleen radiocolloid scans. A "small" spleen implies either a reduction in the entire size of the organ, or the replacement of much of the functioning splenic volume. A recent case illustrates the latter finding.

A 45-year-old man entered the hospital because of left lower quadrant pain of 5 days duration. The pain was described as crampy, not associated with eating, and did not radiate. There had been a long history of ethanol intake. Physical examination revealed a thin man in moderate distress. The abdomen was distended; there were decreased bowel sounds. In the left upper quadrant there was a fullness, suggestive of a mass, which could not be clearly outlined. Initial workup for diverticulitis, including sigmoidoscopy and barium enema, was unproductive. An intravenous pyelogram revealed a left upper quadrant mass, with downward displacement of the left kidney. An upper gastrointestinal radiographic study demonstrated hypertrophic gastric folds. A spleen scan showed the organ to be only 5 cm in length (Fig. 1), our normal values being 10 ± 1.5 cm. A celiac arteriogram, by femoral approach, demonstrated a large avascular mass within the spleen (Fig. 2). A cyst was considered. The patient underwent exploratory laparotomy and splenectomy. The spleen contained a liquefied

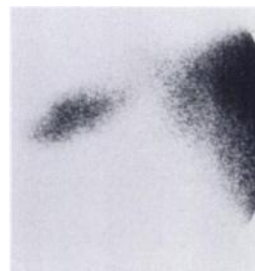


FIG. 1. Posterior scintiphoto showing spleen and part of liver. Functional splenic tissue was present as thin and short (5 cm) band.



FIG. 2. One view from celiac arteriogram performed on patient. Avascular intrasplenic mass is apparent.

hematoma. Postoperatively, the platelet count rose markedly. He was treated with aspirin for this, and was discharged from the hospital.

We regularly report the sizes of the liver and spleen in radiocolloid scans. This is done for two reasons: (a) to alert us to changes in the functional size of these organs, when the patient is studied at two or more times; and (b) in order to recognize an abnormally large or small organ. Our range of lengths for a normal spleen is identical with that found by Larson and coworkers (1) and is close to the values reported by Sigel and associates (2). A functional length of less than 7 cm is more than 2 standard deviations below the mean, in which case a reason for the reduction in functioning splenic tissue must be sought. A number of disorders resulting in a spleen of decreased overall size have been discussed (3). The present case illustrates that replacement of much of the splenic volume by abnormal tissue can produce a rather similar radiocolloid image.

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REFERENCES

1. LARSON SM, TUELL SH, MOORES KD, et al: Dimensions of the normal spleen and prediction of spleen weight. *J Nucl Med* 11: 341, 1970
2. SIGEL RM, BECKER DV, HURLEY JR: Evaluation of spleen size during routine liver imaging with ^{99m}Tc and the scintillation camera. *J Nucl Med* 11: 689–692, 1970
3. SPENCER RP: The small spleen; a study of etiology and pathogenesis. *J Nucl Med* 16: 571, 1975