

Case Report

Hepatic Defect Caused by Dilated Biliary System

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Liver defects revealed during hepatobiliary imaging have been attributed to various causes such as hepatic masses (1) and bile duct obstruction (2). When obstruction is suspected, the cholescintigram is generally the examination of choice because of its sensitivity. This is particularly true in determining hyperbilirubinemia (3). The following case presents a common bile duct obstruction where grossly dilated gallbladder and ducts caused a large defect in the liver.

Case Report

An 85-year-old white woman was transferred to this institution from a convalescent hospital. She was refusing to eat and losing weight. Abdominal examination showed left lower quadrant tenderness with rebound. Total serum bilirubin was 3.0 mg/dl (normal is 0.1–1.2 mg/dl), serum alkaline phosphatase was 1,093 CNU (normal < 100), and SGOT was 256 CNU (normal < 100).

Scintigraphy was performed using 5 mCi of intravenously injected Tc-99m DISIDA (diisopropyl iminodiacetic acid, New England Nuclear Corp., North Billerica, MA). Images were obtained at 5, 10, 15, 30, 45, and 60 min postinjection using a scintillation camera with a high-resolution collimator. Delayed images were not obtained at the discretion of the nuclear medicine physician. The images demonstrated a large defect in the right lobe of the liver (Fig. 1). The gallbladder was not visualized; neither were the ducts, and no activity was seen in the bowel.

Real-time ultrasonography was performed at the conclusion of scintigraphy. The sonogram showed marked dilatation of the gallbladder and biliary tree (Fig. 2); the common bile duct measured approximately 2 cm (Fig. 3). Strong echoes with shadowing were observed in the distal portion of the common duct, probably representing a large stone. No mass was identified in the liver.

Percutaneous transhepatic cholangiography was then performed. This indicated a large stone at the junction of the

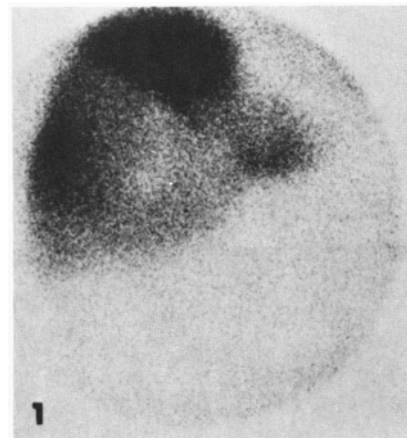


FIG. 1. Anterior view of liver 1-hr postinjection demonstrates large defects.

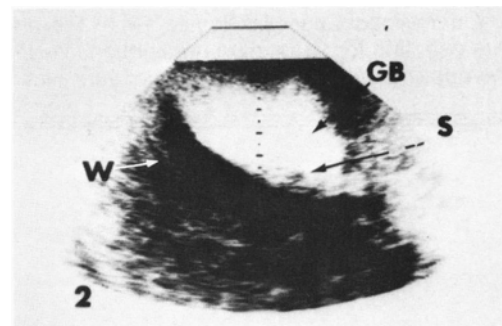


FIG. 2. Real-time ultrasound image demonstrates markedly enlarged gallbladder (GB) with thickened walls (W) and sludge formation (S). In this supine patient the anterior aspect of gallbladder is at top of image.

common hepatic duct and the cystic duct. The patient was then taken to surgery where a cholecystectomy with duct exploration was performed. Many stones were found in the gallbladder and in a stricture in the common duct. The pathology report indicated chronic cholecystitis with cholelithiasis.

Discussion

I believe this case report underscores the reasons for performing Tc-99m DISIDA scans but also points to the need for

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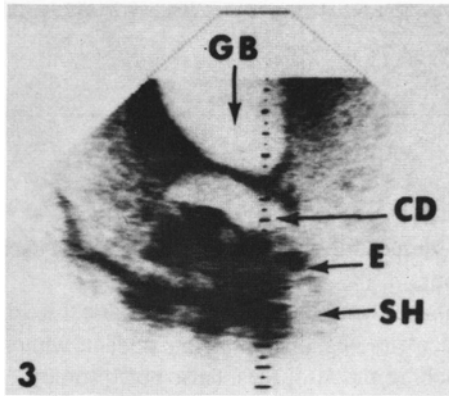


FIG. 3. Sonogram of common duct (CD) shows an enlarged duct with strong echos (E) and shadowing (SH) occurring at distal end; these are indicative of cholelithiasis.

complementary types of imaging. In this case, the Tc-99m DISIDA scan provided information about the flow of bile; it also revealed good hepatic uptake plus nonvisualization of the

biliary system and bowel, and thus suggested a common bile duct obstruction (3). However, the cause of such an obstruction, which could be, for example, an impacted cholelith or neoplastic tissue (1), must be determined using another imaging modality.

In this case, ultrasound provided the needed information as to the probable source of the imaging defect by demonstrating the dilated biliary system with stones present. Ultrasound's anatomical information complemented the functional information obtained from the scintigram (3). The need for complementary, not substitutionary, imaging modalities becomes clear.

References

1. Zeman RK, Gold JA, Gluck L, et al. Tc-99m HIDA scintigraphy in segmental biliary obstruction. *J Nucl Med* 1981;22:456-58.
2. Gupta S, Owshalimpur D, Cohen G, et al. Scintigraphic detection of segmental bile-duct obstruction. *J Nucl Med* 1982;22:890-91.
3. Weissmann HS, Sugarman LA, Freeman LM. The clinical role of technetium-99m iminodiacetic acid cholescintigraphy. In: Freeman LM, Weissman HS, eds. *Nuclear Medicine Annual 1981*. New York, Raven Press, 1981: 48-51, 72.