CASE REPORTS

Acalculous Cholecystitis: A Case with Variable Cholescintigram

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A 62-yr-old man with acalculous cholecystitis is presented. At different stages of his disease his cholescintigram was abnormal and then normal. The case demonstrates the variations of the cholescintigram that may occur during the disease and illustrates the difficulties that may be encountered in making the diagnosis.

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Cholescintigraphy has proven to be a very reliable procedure for the exclusion of acute cholecystitis (*1–4*). However, occasional false-negative results have been reported in the presence of acute acalculous cholecystitis (*5,6*). This report illustrates some of the difficulties in making the diagnosis and the variability of the cholescintigraphic pattern that may occur in a patient at different phases of the disease.

CASE REPORT

A 62-yr-old white male was admitted because of nonradiating right upper quadrant pain, with nausea and vomiting, for 2 days. For the previous 3 mo, he had had intermittent vomiting with occasional abdominal pain that was not clearly defined but tentatively attributed to peptic ulcer disease. Other medical history included chronic renal failure due to nephrosclerosis, for which he had been on continuing hemodialysis for the past 9 yr. He had also had two coronary artery bypass grafts 4 yr previously and was currently free of angina. On examination, he had right upper quadrant tenderness with Murphy's sign but no guarding. His temperature was 98.4°F. Pertinent laboratory findings were a white count of 7900 with normal differential, and normal bilirubin, alkaline phosphatase, LDH, SGOT, SGPT, and amylase. An oral cholecystogram showed no gallbladder opacification, and ultrasound revealed no stones. An upper GI series was normal. Cholescintigraphy (Fig. 1) showed prompt parenchymal uptake and excretion of tracer into the small bowel, but the gallbladder was not visualized over the 3 hr of the study. The patient remained afebrile, and over the next 4 days his symptoms disappeared, and he was able to resume eating. He was discharged with no definitive diagnosis for his abdominal pain.

For about a month he was free of abdominal symptoms, but then entered a 3-wk period characterized by intermittent vomiting, abdominal pain, and a 10-lb weight loss. At this point, an upper GI series was again normal. A repeat cholescintigram (Fig. 2), now 7 wk after the first one, was normal, with prompt appearance of tracer in the gallbladder. His symptoms abated for the next month but he was then readmitted to the hospital because of abdominal pain. The pain was in the mid and lower abdomen, sharp in character and relatively constant. On examination, his abdomen was diffusely tender but more so in the right upper quadrant, with guarding but no rebound tenderness. His white cell count was 9,200 and his liver function tests and serum amylase were normal. Over the next day, his temperature rose from 98.9° to 101.2°F. His pain worsened and localized in the right upper quadrant. He was taken to surgery, where a perforated gallbladder was found and cholecystectomy was performed. An intraoperative cholangiogram showed good passage of dye into the duodenum with no evidence for stones. Pathological examination of the gallbladder revealed acute cholecystitis without stones.

His postoperative course was uncomplicated and he has remained well for the past 6 mo, on chronic hemodialysis and without vomiting or abdominal pain.

DISCUSSION

Acalculous cholecystitis, i.e., inflammation of the gallbladder in the absence of stones, is relatively uncommon. The acute form has been reported in about 6% of cases that present with the clinical

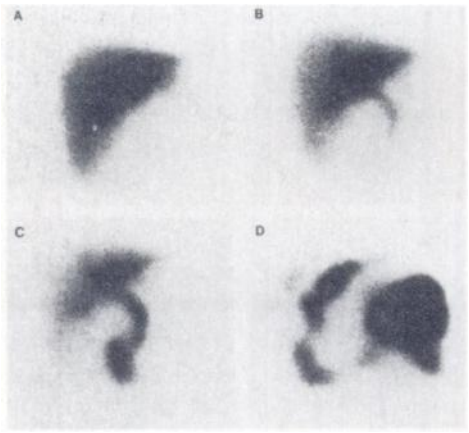

FIG. 1. Cholescintigram performed after injection of 5 mCi of Tc-99m disofenin. Images collected at (A) 5, (B) 15, (C) 30, and (D) 90 min. By 3 hr biliary activity was essentially absent and gallbladder had not been visualized.

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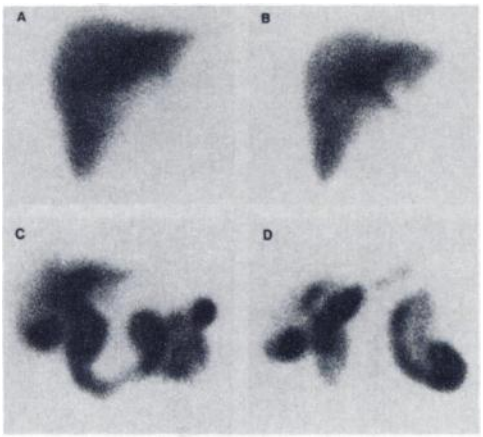

FIG. 2. Cholescintigram performed after injection of 5 mCi Tc-99m disofenin. Images collected at (A) 5, (B) 15, (C) 40, and (D) 60 min. Gallbladder and bowel activity appear by 30 min.

appearance of acute cholecystitis (*7,8*). The prevalence of the chronic form is less certain but has been reported as about 1% in a series of cholecystectomies (*9*). The clinical picture of acalculous cholecystitis covers the same spectrum as that of calculous cholecystitis, with presenting symptoms and signs that include right upper quadrant pain and tenderness, jaundice, epigastric distress, and fever. Its diagnosis, when signs and symptoms are not completely characteristic, is prone to the same uncertainties as that of cholecystitis with stones, but with the additional problem that key tests may not be helpful. The ultrasound, oral cholecystogram, and cholescintigram examinations may all be normal.

During the first episode of suspected gallbladder disease in our patient, the decision against surgery was made despite the abnormal radiographic cholecystogram and the cholescintigram, because of the absence of stones by ultrasound, the absence of fever, the normal white cell count, and the rapid remission of symptoms in a patient who was a poor surgical candidate. When the question arose again, the diagnosis of cholecystitis was deferred because of the normal cholescintigram. Although no pathological proof of cholecystitis was obtained at the times of scintigraphy, it is clear that our patient was indeed suffering from cholecystitis of varying degree throughout the period described above, since the symptoms were similar during the course, intensified at the time of the gallbladder perforation, and disappeared after cholecystectomy.

Fortunately, a false-negative cholescintigram in acute acalculous cholecystitis seems to be uncommon. Although two false-negative studies have been published as case reports (*5*), in a combined series of 22 cases, only one had a normal cholescintigram (*6,10*). Coupled with the low incidence of acute cholecystitis without stones, this indicates that a normal cholescintigram would only rarely be misleading in excluding the diagnosis. The situation is otherwise in chronic acalculous gallbladder disease. Even in the presence of stones, chronic cholecystitis frequently shows normal gallbladder uptake of radionuclide (*3,4*). Data for chronic acalculous cholecystitis are limited, partly because of the difficulty in making the definitive diagnosis, but a small series showed normal visualization of the gallbladder in two of seven cases (*10*). The demonstration of abnormal kinetics of emptying after cholecystokinin stimulation can help to make the diagnosis in at least some of those cases with normal gallbladder filling (*11*).

Our case illustrates the difficulty that may be encountered in making the diagnosis, and the variability of the radionuclide study at different stages of the disease. It illustrates that, in the presence of acute symptoms, the cholescintigram may be a more reliable index of cholecystitis than ultrasonography.

REFERENCES

1. PARE P, SHAFER EA, ROSENTHALL L: Nonvisualization of the gallbladder by 99mTc-HIDA cholescintigraphy as evidence of cholecystitis. *Can Med Assoc J* 118:384-386, 1978
2. WEISSMANN HS, FRANK MS, BERNSTEIN LH, et al: Rapid and accurate diagnosis of acute cholecystitis with ^{99m}Tc-HIDA cholescintigraphy. *Am J Roentgenol* 132: 523-528, 1979
3. BENNETT MT, SHELDON MI, DOS REMEDIOS LV, et al: Diagnosis of acute cholecystitis using hepatobiliary scan with technetium-99m PIPIDA *Am J Surg* 142:338-343, 1981
4. ROSEN PR, RUSING TW, NUSYNOWITZ ML, et al: 99mTc-PIPIDA cholescintigraphy in the diagnosis of gallbladder disease. *Am J Med Sci* 284:23-31, 1982
5. ECHEVARRIA RA, GLEASON JL: False negative gallbladder scintigram in acute cholecystitis: *J Nucl Med* 21:841-843, 1980
6. WEISSMANN HS, BERKOWITZ D, FOX MS, et al: The role of technetium-99m iminodiacetic acid (IDA) cholescintigraphy in acute acalculous cholecystitis. *Radiology* 146: 177-180, 1983
7. GLENN F: Acute acalculous cholecystitis. *Ann Surg* 189: 458-465, 1979
8. HOWARD RJ: Acute acalculous cholecystitis. *Am J Surg* 141:194-198, 1981
9. ANDERSON A, BERGDAHL L, BOQUIST L: Acalculous cholecystitis. *Am J Surg* 122:3-7, 1971
10. RAMANNA L, SALIMPOUR P, BRACHMAN M, et al: Evaluation of Tc-99m PIPIDA scintigraphy in acalculous cholecystitis. *J Nucl Med* 23:P90, 1982 (abst)
11. DOHERTY PW, SCHLEGEL P, KING MA, et al: Abnormal gallbladder emptying in response to cholecystokinin (OP-CCK) in patients with acalculous gallbladder disease. *J Nucl Med* 24:P8, 1983 (abst)