

Gallium-67 Spread to the Anterior Pararenal Space In Pancreatitis: Case Report

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Gallium imaging has been of value in revealing the spread of inflammatory pancreatic disease to the anterior pararenal space. Recognition of this retroperitoneal space and the potential usefulness of its imaging in the diagnosis of pancreatic diseases are discussed.

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The purpose of this report is to demonstrate a characteristic scan appearance produced by gallium-67 citrate in two patients with diffuse pancreatic disease. The images suggest that radiogallium distribution conforms to the anatomic confines of the anterior pararenal space of the retroperitoneum. This permits diagnostic differentiation between peritoneal and retroperitoneal disease.

CASE REPORTS

Case 1. A 52-year-old woman entered with left lower quadrant pain radiating to the back. She had a long history of recurrent pancreatitis associated with ethanol intake. She had undergone a Billroth II anastomosis following an episode of gastrointestinal bleeding secondary to a gastric ulcer, and later had been treated medically for her pancreatitis. One year before the present admission she had left lower quadrant pain, and a G.I. series showed displacement of small-bowel loops, suggesting a pseudocyst in the pancreatic tail. At operation the pseudocyst was drained into the gastric remnant. The patient then did well until the present admission. Her temperature was 38°C, and there was left lower quadrant tenderness and no jaundice. The alkaline phosphatase was elevated, whereas the SGOT, SGPT, bilirubin, and urinary amylase were all normal. A barium enema showed medial deviation of the descending colon and a pattern of mucosal irritation. Ultrasound indicated a sonolucent left lower quadrant mass. Abdominal scans, 48 hr after intravenous administration of 3 mCi of Ga-67 citrate, revealed activity in the liver, pancreas, and left side of the abdomen (Fig. 1, left). At 72 hr only the liver and the ac-

tivity in the left side could be seen (Fig. 1, right). At operation, pancreatitis was found, as well as a collection of purulent material that was retroperitoneal and extended downward parallel to the descending colon. This was confirmed by injection of contrast medium (Fig. 2).

Case 2. A 63-year-old man with a history of moderate ethanol intake was admitted with abdominal pain of 3 days' duration. Physical examination revealed tachycardia, abdominal distention, and epi-

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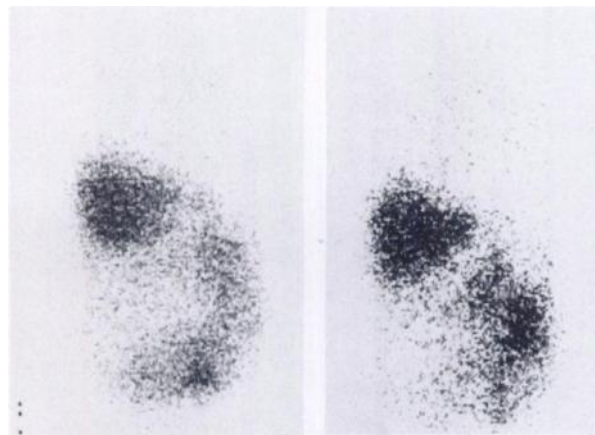


FIG. 1. Scans of the abdomen at 48 hr (left) and 72 hr (right) after intravenous administration of Ga-67 citrate. Liver can be identified as well as a left-sided mass. Pancreas is perhaps apparent on 48-hr image.

gastric tenderness. His hospital course was marked by a low-grade fever, leukocytosis, elevated serum amylase, and, initially, hypocalcemia. Abdominal paracentesis yielded a sanguinous fluid with an elevated amylase. An upper G.I. series gave findings consistent with pancreatic enlargement. A scintiscan, 48 hr after intravenous administration of 3 mCi of Ga-67 citrate demonstrated accumulation in the left flank region (Fig. 3). A barium enema revealed narrowing and an inflammatory appearance distal to the splenic flexure. At laparotomy, acute pancreatitis was found, with an area of necrosis in the body and tail of the pancreas and inflammatory extension into the retroperitoneum. Cultures of the pancreatic area did not yield pathogenic organisms. The pancreatic bed and retroperitoneal space were drained and a gastrotomy, jejunostomy, and cholecystectomy were performed. Postoperatively the fever and abdominal pain subsided gradually.

DISCUSSION

While Kennedy and coworkers (1) have published a Ga-67 positive image of an infected pancreatic pseudocyst, little attention has been paid to the scan appearance of diffuse pancreatitis and its spread. Both of our patients accumulated radionuclide along a vertical axis on the left side of the abdomen. This distribution corresponds to one of the routes of spread of pancreatic inflammation. Appreciation of the anatomy of the region [largely due to the work of Meyers (2)] aids in interpreting the images. The most common spread of pancreatic enzymes is via the peritoneal reflections, such as the transverse mesocolon, contiguous with the retroperitoneal pancreas. Spread along this route often

terminates at the anatomic splenic flexure, limited by the phrenicocolic ligament. Another common pathway of spread is along the root of the mesentery, with small-bowel involvement (2) (Fig. 4). The route along the transverse mesocolon may contribute to the "colon cutoff sign" on plain film, or less commonly may lead to colonic stricture (5). Spread along the mesenteric root is probably the origin of dilated small-bowel segments (sentinel loops).

In our two patients the disease spread to the anterior pararenal space of the retroperitoneum. Thus the phrenicocolic ligament, which crosses the retroperitoneum, was involved and breached (Fig. 5). The phrenicocolic ligament could have been involved in two ways: (a) by spread along the transverse mesocolon with direct extension to the phrenicocolic ligament, or (b) by direct extension to the ligament, disease process remaining entirely retroperitoneal (3). Meyers (4) has noted that the anterior pararenal space is limited by the posterior parietal peritoneum anteriorly and the anterior renal fascia posteriorly. This space includes the pancreas, duodenal loop, and both ascending and descending colon. Inflammation within this space tends to extend inferiorly toward the pelvis. A published radiograph of an anterior pararenal space opacified by means of contrast medium (Fig. 4 in Ref. 4) matches the contour described in our patients.

The reported cases have shown the specific value of radiogallium imaging in pancreatic inflammatory disease. Ultrasonic examination, while defining the presence of a fluid containing space in the left lower quadrant, gave no information about the presence of an inflammatory process (Case 1). Further, ultrasound gave the impression that the disease process

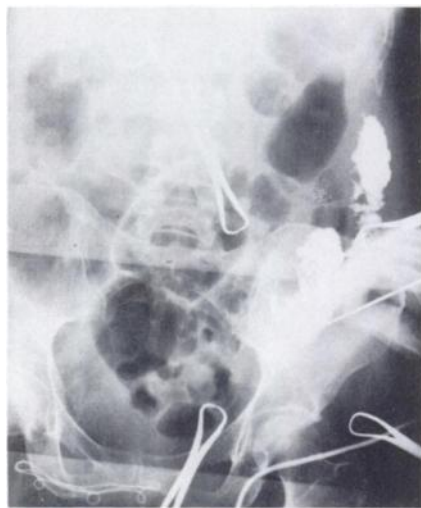


FIG. 2. Intraoperative injection of contrast medium into the retroperitoneal abscess in Case 1.

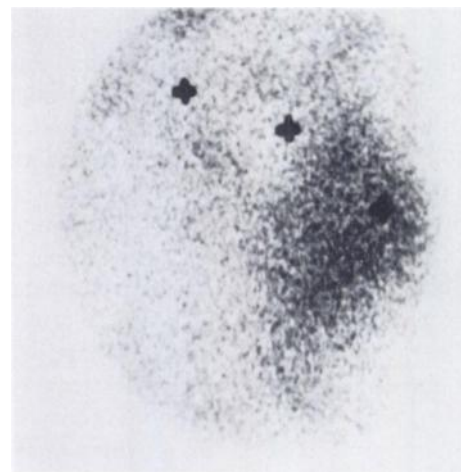


FIG. 3. Anterior scintiscan of the left side of the abdomen, in Case 2, 48 hr after intravenous administration of Ga-67 citrate. The costal margin is marked by two plus signs. There is significant left-sided accumulation of radioactivity.

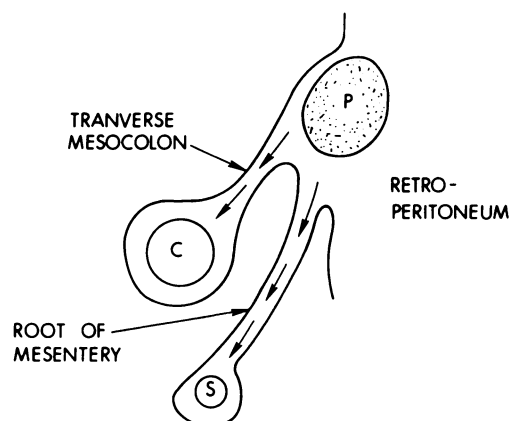


FIG. 4. Schematic tangential section showing the pancreas (P), transverse colon (C), and small bowel (S). Spread of pancreatic enzymes along the transverse mesocolon or the root of the mesentery is depicted. (Redrawn from Ref. 2 by permission of the American Journal of Roentgenology.)

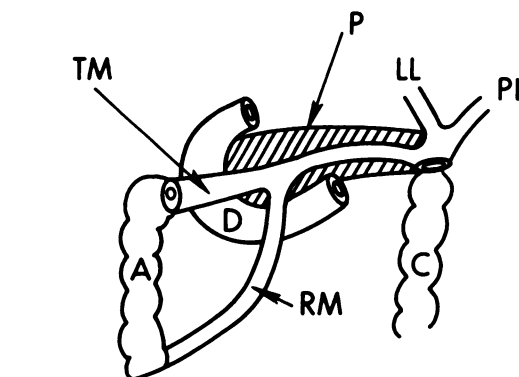


FIG. 5. Schematic diagram of the anatomic relationships of the pancreas. A—ascending colon; C—descending colon; D—duodenum; LL—lienorenal ligament; P—pancreas; PL—phrenocolic ligament; RM—root of mesentery; and TM—transverse mesocolon. (Redrawn from Ref. 2, by permission of the American Journal of Roentgenology.)

was localized to the pelvis. Gallium-67 imaging delineated the entire process, showing its continuity with the pancreas and its involvement of the pararenal space (Cases 1 and 2). Knowledge of the routes of spread of pancreatic disease, coupled with the positive gallium image, may aid in more precise diagnosis and prognosis of inflammatory diseases of the pancreas.

ACKNOWLEDGMENT

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