JBR–BTR, 2011, 94: 152-153.

ISCHEMIC GALLBLADDER PERFORATION

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Key-word: Gallbladder, perforation

Background: A 63-year-old woman was admitted to the department of vascular surgery with abdominal angor and hypertension. Abdominal CT angiography revealed occlusion of the celic trunk and superior mesenteric trunk and severe stenosis on the left renal artery.
Stenting of the left renal artery was successfully performed. One week after the procedure, the patient was admitted at the emergency department with severe abdominal pain, which began a few hours before admission.

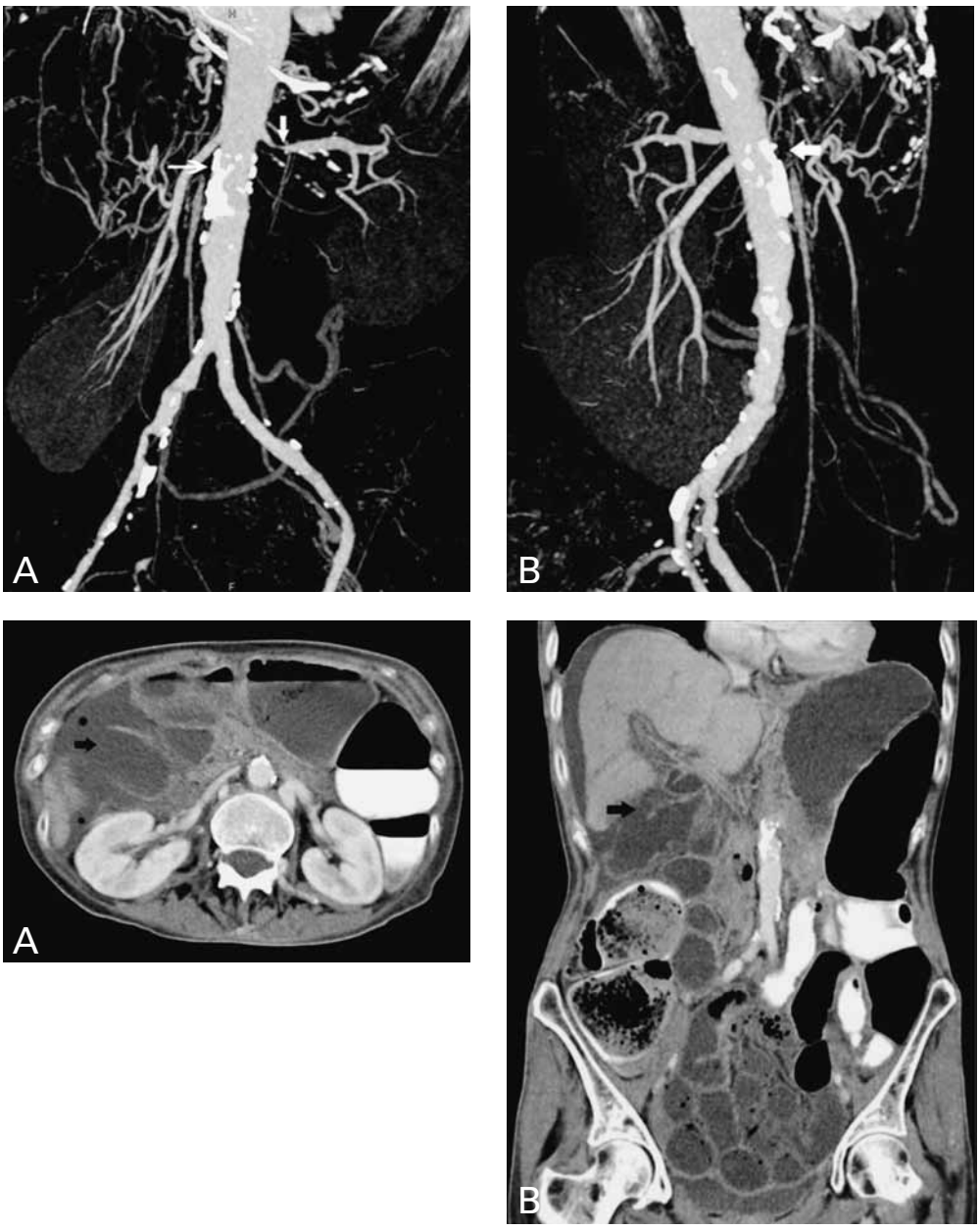

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Fig. 1A | 1B / 2A | 2B

Work-up

CT angiography of the abdominal vessels (MIP-image, Maximum Intensity Projection) (Fig. 1), AP view (A) shows high grade postostial stenosis of the left renal artery (thick arrow) and occlusion of the superior mesenteric artery (long arrow). Nearly profile projection (B) confirms of occlusion of the proximal superior mesenteric artery (arrow) and complete occlusion of the celiac trunk.

Contrast-enhanced CT scan of the upper abdomen (Fig. 2), axial section (A) shows focal defect in the gallbladder wall (arrow) with adjacent fluid within the peritoneal cavity (asterisks). On coronal MPR-image (B), the defect in the gallbladder wall is indicated by a black arrow. Note also thinning of gallbladder wall and the presence of free peritoneal fluid.

Radiological diagnosis

Based on the imaging appearance, the diagnosis of *ischemic gallbladder perforation* was made which was confirmed after surgery. Unfortunately, the patient died due to the complications of an overwhelming bile peritonitis.

Discussion

Perforation of the gallbladder can occur due to a complication of acute (in 3-10%) or chronic cholecystitis, presenting with or without gallstones. Other causes are trauma, neoplasms, steroïdtherapy or vascular compromise.

Gallbladder perforations are classified into three categories. The first category describes acute free perforations into the peritoneal cavity. The second type, which is the most common one, is a subacute perforation with pericholecystic abscess. The last category are chronic perforations with cholecystoenteric fistula.

Vascular compromise of the gallbladder wall is usually secondary to gallbladder distention leading to gangrene, necrosis and perforation.

Acute free perforation, due to primary occlusion or thrombosis of the cystic artery is rare. Because of the relatively poor blood supply, the fundus of the gallbladder is the most frequent site of perforation.

Clinical signs include right upper abdominal pain, fever and leukocytosis. In some cases, elevated serum alkaline phosphatase and amylase have been reported.

As clinical signs are non-specific, imaging plays a pivotal role in the diagnosis.

Ultrasonography is usually the initial imaging examination to evaluate cases of acute gallbladder pathology, but the role of CT continues to expand. Findings on ultrasonography may be nonspecific and a focal wall defect is not always seen. Free fluid around the gallbladder and an irregular or ill-defined gallbladder wall can be observed.

CT is first choice in imaging of gallbladder perforation. CT is superior to ultrasonography to assess a focal wall defect, but free peritoneal fluid and caliber changes of the gallbladder wall are equally visualized on CT and ultrasonography. Whereas most pathologic conditions of the gallbladder present with a thickened wall, thinning of the gallbladder wall may be rarely seen in ischemic gallbladder disease. This presentation is probably similar to thinning of the bowel wall due to acute arterial ischemia. On CT, bile peritonitis, as a complication of perforation, is seen as diffuse inflammatory changes on the mesenteries and the peritoneal surface associated with ascites. Secondary, proliferation of gas-forming organisms in an anaerobic environment may result in gas into the gallbladder wall or free air within the gallbladder bed, which is easily depicted by CT.

A hepatobiliary scan is a sensitive technique for detecting biliary leaks, but not for visualizing the site of leak.

Preoperative diagnosis of gallbladder perforation is of utmost importance to facilitate prompt surgical intervention and decrease morbidity and mortality.

Laparoscopy or laparotomy still plays a decisive role in confirmation of the diagnosis as well as therapy, which includes cholecystectomy. Despite better imaging techniques the prognosis remains poor, with a high mortality rate up to 24%.

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