

Infrequent differential diagnoses to consider in thickening of the gallbladder wall

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Authors: M. Perez, J. P. Espinosa, V. García, B. Molinares; Medellin, Antioquia/CO
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Learning objectives

Describe the infrequent differential diagnoses to consider in thickening of the gallbladder wall

Discuss imaging findings to diagnose diseases characterized by thickening of gallbladder wall

Images for this section:



Fig. 1: Traumatic Gallbladder Injury. Contrast - enhanced CT scan of the abdomen. Identifies right hepatic fracture with rupture of the anterior gallbladder wall and intraluminal bleeding associated with pneumoperitoneum and hemoperitoneum.

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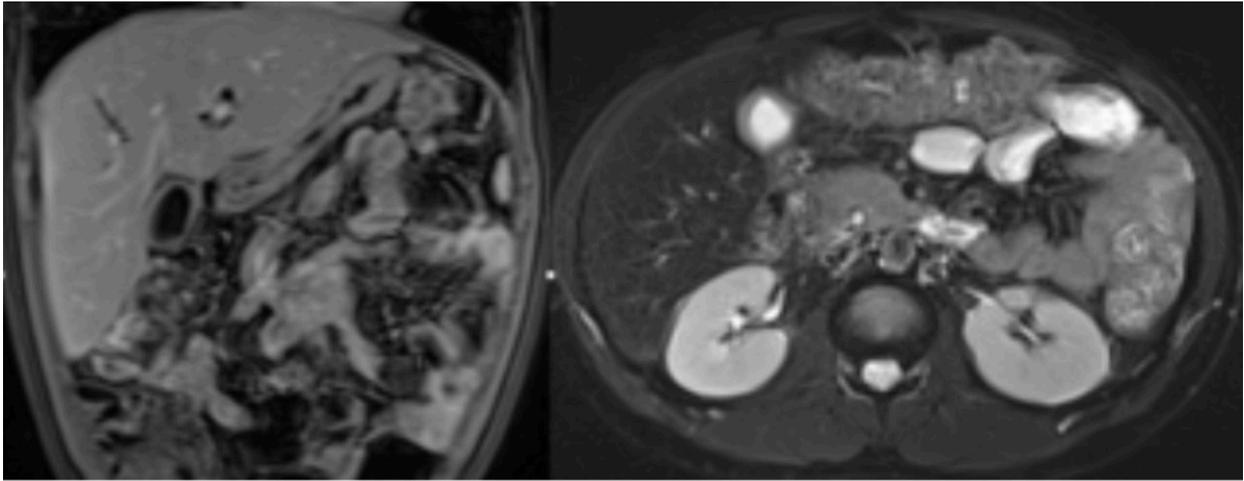


Fig. 2: Patient with acute myelogenous leukaemia. Simple and contrast-enhanced magnetic resonance of the abdomen. Coronal T1 corona suppression (left): Diffuse and homogeneous enhancement of the gallbladder wall. Axial T2 fat suppression (right): Diffuse and irregular thickening of the gallbladder wall, without perivesicular fluid or stones.

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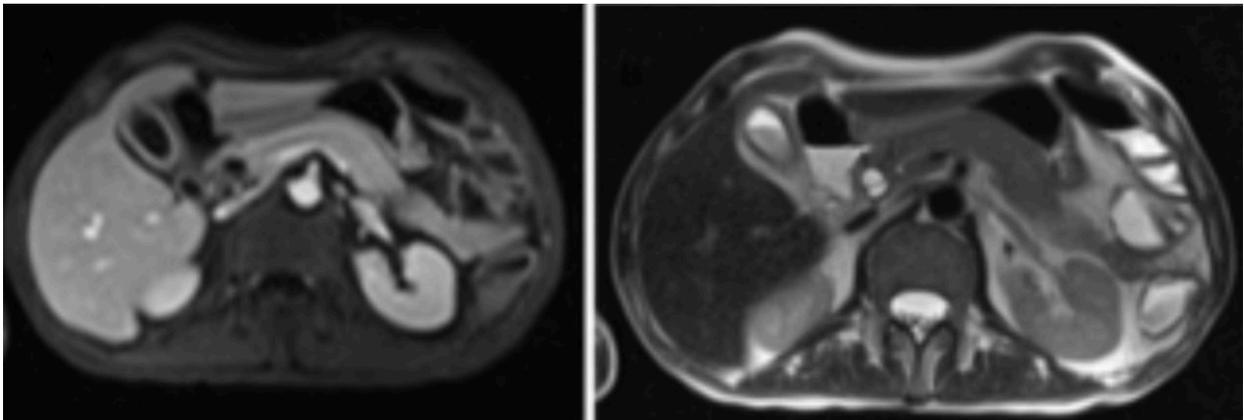


Fig. 3: AIDS cholangiopathy. Simple and contrast-enhanced magnetic resonance of the abdomen. Left, axial T1 and right, axial T2 without fat suppression that identifies thickening and diffuse uptake of the gallbladder walls, with biliary sludge without calculi.

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Background

Thickening of the gallbladder wall is a frequent finding at images. The most common diagnosis is acute cholecystitis.

The images findings are non-specific and can be found in extracholecystic pathological conditions.

We describe and illustrate the infrequent causes of a thickened gallbladder wall like acquired gastrointestinal fistula, AIDS cholangiopathy and gallbladder trauma.

Isolated traumatic gallbladder injuries are uncommon and difficult to diagnose. Motor vehicle collision is the most common cause of gallbladder injury. The delay in diagnosis causes a significant increase in the morbidity and mortality associated with traumatic gallbladder injuries.

Severe gallbladder injury can take the form of contusion, laceration, and avulsion. Gallbladder contusion, or intramural hematoma, is most often diagnosed at the time of laparotomy and is thought to be underreported. Gallbladder laceration, or rupture, is the most commonly reported gallbladder injury

Hepatobiliary diseases have been described with increasing frequency among patients with the acquired immunodeficiency syndrome (AIDS). In patients presenting with a cholestatic pattern of liver function test abnormalities, cholangiopathy associated with human immunodeficiency virus (HIV) infection should be suspected.

Cryptosporidium and CMV were initially described as the causative agents in AIDS-related cholangitis. Although other pathogens have been discovered with increasing frequency, Cryptosporidium remains the most commonly identified cause of AIDS-related cholangitis. It has been identified in the bile ducts or stools in 20 to 62% of patients with AIDS-related cholangitis. CMV is probably the second most common cause of AIDS-related cholangitis, having been described in 23 to 42% of patients.

Abdominal sonography and CT are effective in identifying biliary disease in patients with AIDS, but cholangiography is necessary to display the precise anatomic irregularities.

Spontaneous internal biliary fistulas represent a complication of cholelithiasis or choledocholithiasis in over 90% of cases. Infrequent causes include peptic ulcer disease, malignancy, and prior surgery.

Cholecystoduodenal fistulas are the most common type, followed by cholecystocolic and choledochoduodenal fistulas.

Distal small-bowel obstruction from an impacted ectopic gallstone, so-called gallstone ileus, is an unusual complication of chronic cholecystitis and affects only a minority of patients with cholecystoduodenal fistulas. Gallstones that result in intestinal obstruction typically exceed 2 cm in diameter. Obstruction at the level of the gastric outlet or duodenum represents a specific subset of gallstone ileus that is referred to as Bouveret syndrome. Surgery is indicated to relieve the obstruction in cases of gallstone ileus, and surgical correction is required for the biliary fistula, to prevent future complications.

Images for this section:

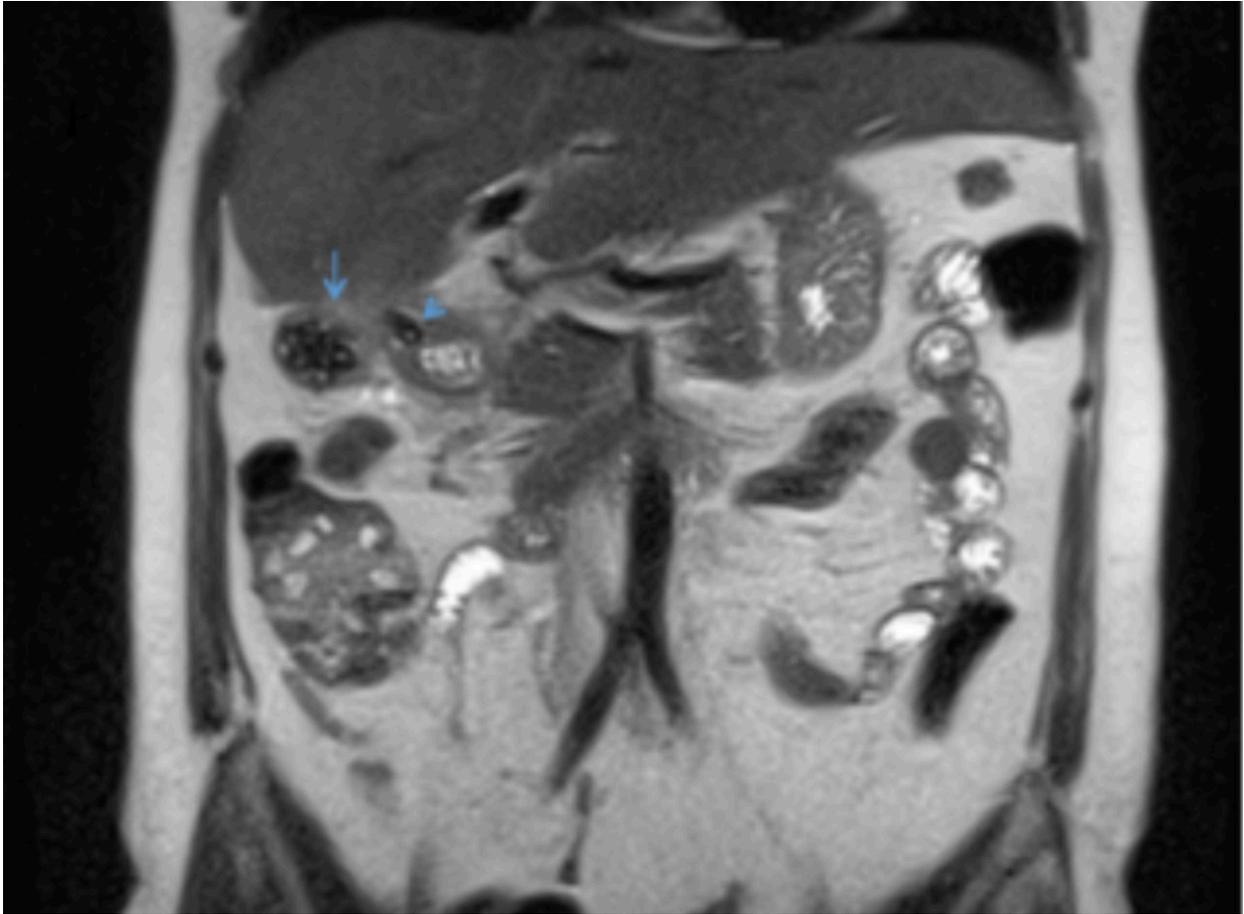


Fig. 4: Acquired Gastrointestinal Fistula. Simple and contrast-enhanced magnetic resonance of the abdomen, coronal T2. Gallbladder completely occupied by calculi, thickened walls and inflammatory changes (arrows), showing cholecystoduodenal fistula with calculi inside (arrowhead), and duodenal bulb infamous (arrow)

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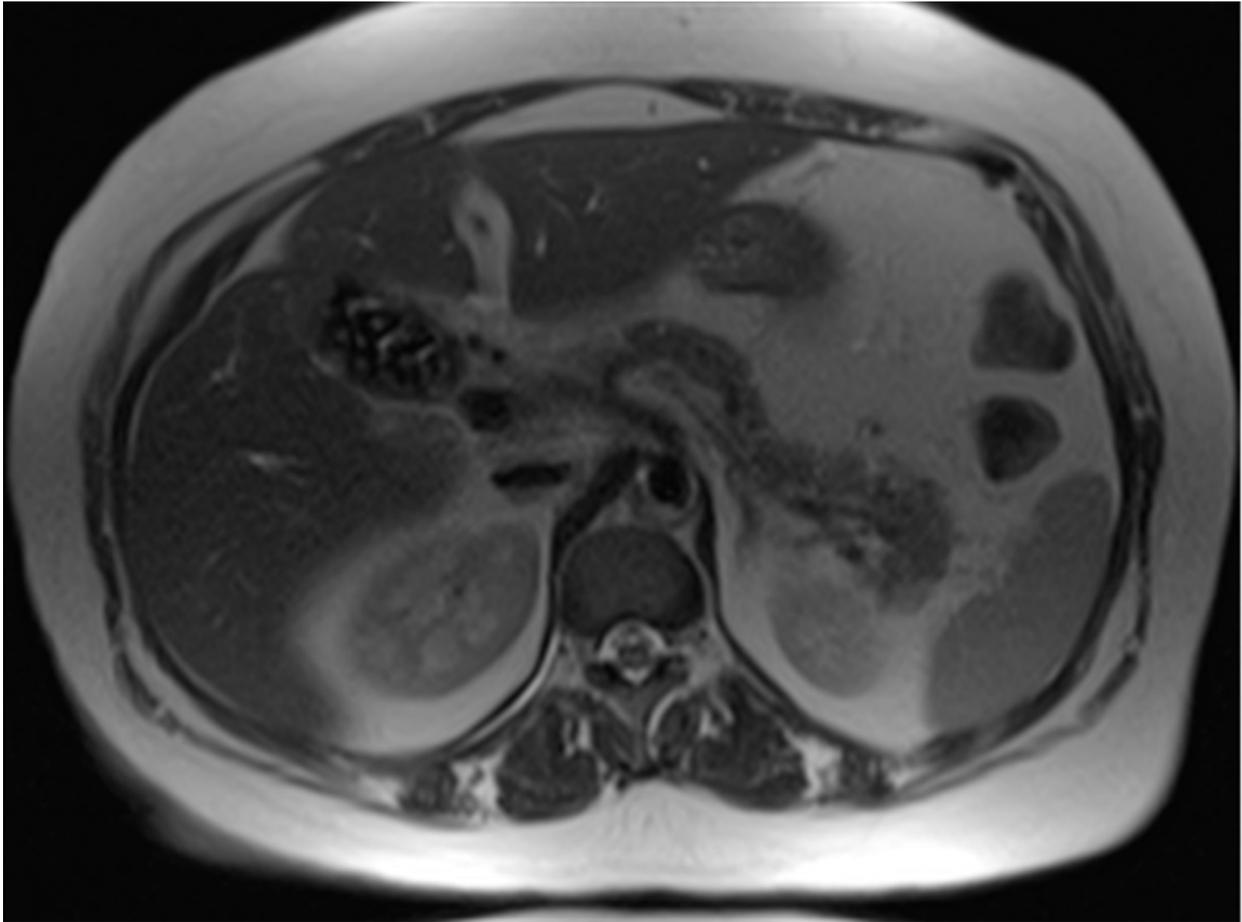


Fig. 5: Magnetic resonance cholangiopancreatography. Axial T2 identifies multiple cholelithiasis with involvement of Hartman's pouch

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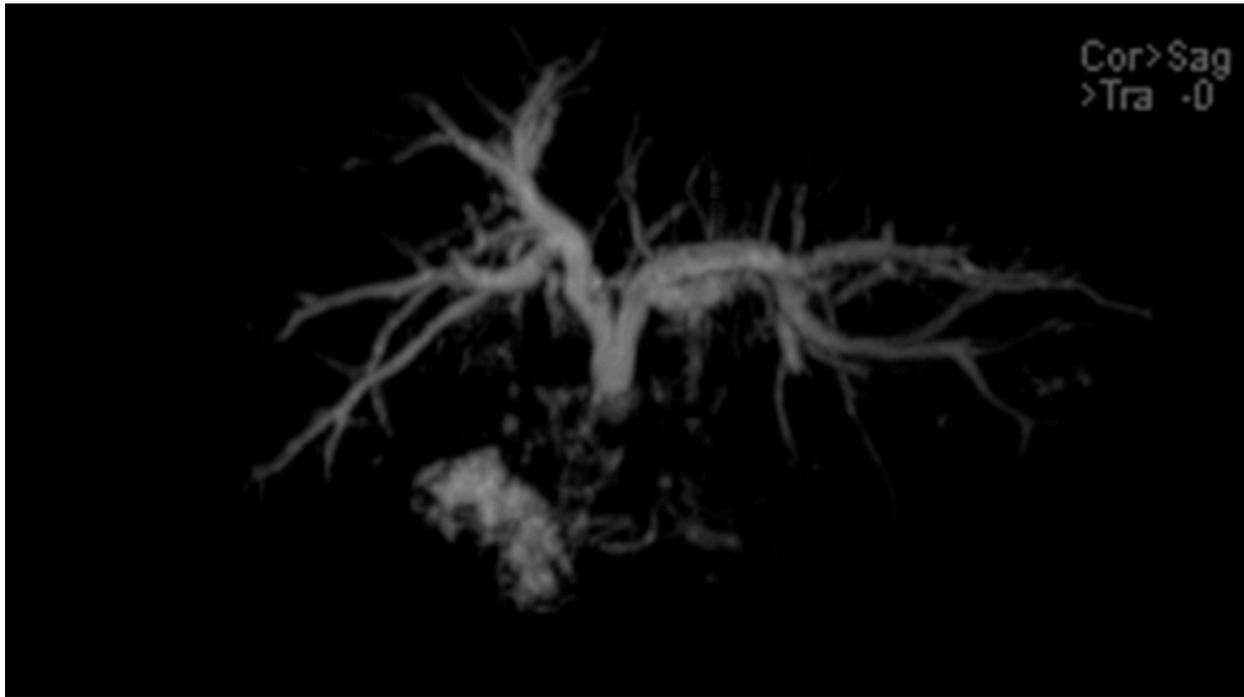


Fig. 6: Magnetic resonance cholangiopancreatography. Interruption of the common hepatic duct by extrinsic compression and dilation of the intrahepatic bile duct

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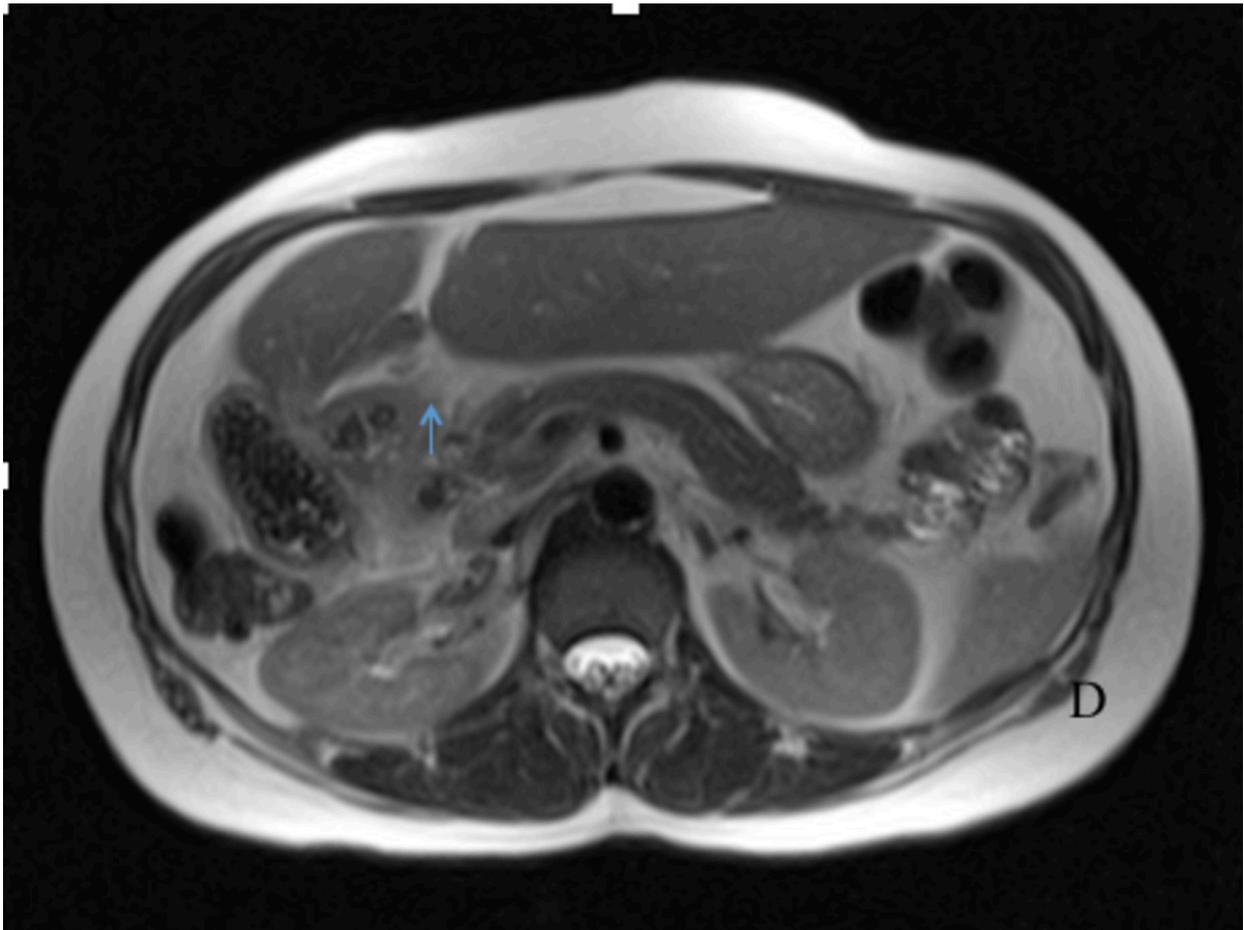


Fig. 7: Magnetic resonance cholangiopancreatography. T2 axial cholelithiasis with cholecystitis and duodenal stones (arrow)

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Findings and procedure details

The radiologist need to know different findings in US, CT and MR on the basis of the patterns and to evaluate the diagnostic value of images in infrequent diseases characterized by thickening of the gallbladder wall.

MR findings of gallbladder wall thickening were evaluated in sequences for MR cholangiograph. The layered pattern of thickened wall was classified into patterns. MR findings of a layered pattern of thickened gallbladder were well correlated with clinics.

The diagnosis of gallbladder injury is made by detecting blood within the gallbladder lumen. Using sonography, echogenic fluid will be detected within the gallbladder.

CT most confidently achieves the diagnosis of gallbladder injury. Blood in the gallbladder most reliably presents as high-density fluid within the gallbladder lumen. Other CT findings that are suggestive of gallbladder injury include thickening or indistinctness of the gallbladder wall and active arterial extravasation into the lumen.

Complete avulsion of the gallbladder results in displacement of the gallbladder from its fossa. Pericholecystic fluid and collapsed gallbladder lumen are less specific indicators of gallbladder trauma. Associated intraabdominal injuries include liver laceration and duodenal hematoma.

Peritoneal lavage may be negative in the setting of an isolated gallbladder avulsion injury because a bile leak and hemorrhage from a ruptured gallbladder may be contained within the extraperitoneal gallbladder fossa.

The diagnosis of AIDS-related cholangitis is based on the typical cholangiographic findings in patients with advanced HIV disease, supported by the demonstration of a pathogen associated with the disease.

Four distinct patterns of AIDS-related cholangitis seen on cholangiography: papillary stenosis occurs in approximately 15- 20% of patients, causing dilatation of the common bile duct to greater than 8 mm and a smooth distal tapering of the duct. Sclerosing cholangitis is characterized by focal strictures and dilatation of the intrahepatic and

extrahepatic ducts; in this pattern, which occurs in 20% of patients, the calibre of the extrahepatic ducts is normal. Combined papillary stenosis and sclerosing cholangitis occurs in 50% of patients therefore, the papilla is involved in 70% of patients. Finally, long extra hepatic bile duct strictures, in which a 1e2 cm stricture is present, occur in approximately 15% of patients.

In nearly all the reported cases of this entity, the anatomic abnormalities of the biliary tract have been demonstrated on ERCP and the diagnosis made based on the direct cholangiographic features indistinguishable from those of primary sclerosing cholangitis (PSC).

Pneumobilia seen on imaging studies strongly suggests the presence of an internal biliary fistula in the absence of prior sphincterotomy, surgical bypass procedure, recent endoscopic retrograde cholangiopancreatography, or passed common duct stone. The Rigler triad of small-bowel obstruction, pneumobilia, and ectopic gallstone is virtually pathognomonic for gallstone ileus but is present on conventional radiographs in only 30%-35% of cases.

Conclusion

Gallbladder wall thickening can result from a broad spectrum of pathological conditions. However there are a large amount of infrequent conditions that the radiologist needs to know to make an adequate diagnosis and improve the patients outcome.

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