

SONOGRAPHY OF GALL BLADDER PERFORATION

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OBJECTIVE : To describe the sonographic signs of gall bladder perforation.

METHOD : Three patients had a diagnosis of gall bladder perforation based on abdominal sonography.

RESULT : All 3 patients had similar sonographic features of gall bladder perforation and had surgical confirmation.

CONCLUSIONS : Abdominal ultrasound may reveal important findings, which may have clinical implications in gall bladder perforation which is very rare and difficult to manage.

Key words : Ultrasonography, gall bladder perforation.

Gall bladder perforation following acute cholecystitis is a rare phenomenon¹ and often followed by a vague and insidious clinical course. Since 1981, we have seen about 37000 patients and encountered 2 cases of double gall bladder² and only three cases of gall bladder perforation, two of them resulted in cholecysto-enteric fistula as confirmed by ultrasonography (USG) and surgery which resolved spontaneously.

CASE REPORTS

CASE 1

A 46 year-old woman with acute abdominal pain was referred for USG. The sonogram showed irregular thickening of the gall bladder wall with associated complex pericholecystic and perihepatic fluid and communication with adjacent bowel loop. Focal loss of reflectivity of the gall bladder was also noted consistent with gall bladder wall disruption. The patient was managed conservatively and was scheduled for interval cholecystectomy.

CASE 2

A man of age 65 years came with acute

abdominal pain for ultrasonography. Findings were highly reflective lumen of gall bladder with calculus and poor lumen contour. There was adhesion in the neck with surrounding structures. Common bile duct (CBD) was dilated (12 mm) with stone in distal part. Laparoscopic cholecystectomy showed gallstone and fistula of gall bladder with duodenum. Spontaneous healing was observed but CBD calculus could not be taken out. Later on, endoscopic retrograde cholangiopancreatography (ERCP) was done after 1 month, stone was crushed and fragments were brought out but not all. Papillectomy was also done.

CASE 3

A man aged about 57 years were referred for ultrasonography, having a history of severe abdominal pain, fever and vomiting for the last 10 days. On clinical examination, abdomen was distended with diffuse abdominal tenderness, more in the right hypochondriac region. Pulse and blood pressure were normal. Previously ultrasound was performed elsewhere and the case was diagnosed as soft tissue mass in the gall bladder with cholelithiasis. In ultrasound scan, we found moderate amount of free echogenic fluid collection in the peritoneal cavity. Liver was enlarged in size, but uniform in echotype.

Gall bladder was distorted in size and shape, lumen was almost obliterated,echo bladder fossa which was clearly separated from the right kidney and the gut. The case was diagnosed as perforation of gallbladder associated with sub-hepatic abscess and pyoperitoneum, which was confirmed by laparotomy. During laparotomy, after exploration of peritoneum it was found that the peritoneal cavity was filled with pus, and localized collection beneath the liver(right lobe). Gall bladder was found to be ruptured with multiple stones of various sizes in it as well as in the peritoneal cavity. After cholecystectomy, peritoneal toiletting was done and the gall bladder tissue was sent for histopathologic examination. No malignancy was found, however, there were some inflammatory changes in the gall bladder.

DISCUSSION

Gall bladder perforation(also referred to as lacerations or ruptures) occur secondary to acute cholecystitis, infection, trauma or malignancy. It is five time more common in emphysematous cholecystitis than gallstone-induced cholecystitis. Emphysematous cholecystitis is an unusual variety of acute cholecystitis and 20-30% of cases will occur in diabetics and many will not have gallstones.^{3,4} Sonography, cholescintigraphy(hepatobiliary scan), and computed tomography along with a high index of suggestion are useful for early diagnosis of gall bladder perforation. Sonographic findings include a complex echogenic pericholecystic fluid collection, a thickened hypoechoic edematous gall bladder wall, a collapsed gall bladder lumen despite prolonged fasting and disruption of the gall bladder wall with focal loss of its reflectivity.^{5,6} The treatment of choice for gall bladder perforation is cholecystectomy. Alternative treatments include biliary stent placement and conservative treatment. Swayne and Filippone retrospectively analyzed the cholescintigrams and sonograms of 36 consecutive patients with gall bladder perforation and concluded that although cholescintigraphy appears superior to sonography, both modalities are relatively insensitive for the detection of gall bladder perforation.⁷⁻⁹ In 1934,

Niemeir¹⁰ proposed a classification of gall bladder perforation which was modified subsequently¹¹: Type I perforation(acute free intraperitoneal spill) accounts for 31-37% of all cases; Type II perforation (subacute local perforation with pericholecystic abscess formation) comprises 39-57% of all cases; and Type III perforation (chronic cholecystoenteric fistula formation) accounts for the remaining 6-29%.¹⁰⁻¹³ Abu-Dalu and Urca¹⁴ reported a 52% cystic duct patency rate at surgery in their series of patients with type I gall bladder perforations. Type II gall bladder perforations are the most common type seen at surgery since acute perforations tend to become walled-off quickly by inflammatory adhesions. Pericholecystic fluid is a sonographic sign of gall bladder perforation^{6,15}; however it is not pathognomonic of perforation and is also seen in ascites, intraperitoneal hemorrhage, liver abscess, peritonitis, peptic ulcer and pancreatitis.⁶ Thickening of the gall bladder wall is another relatively nonspecific finding in acute cholecystitis (43% to 72% sensitivity) and gall bladder perforation (43-64%). Sonographic Murphy sign is a useful adjunct with a sensitivity of 72% in acute cholecystitis,¹⁶ the sensitivity is lower (33%) in gangrenous cholecystitis.¹⁷

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