Gastrointestinal radiology

Biliary ileus: preoperative diagnosis by US. A report of two cases

V. Šimonovský
Clinic of Imaging Methods, FN Motol, 150 18 Praha 5, Motol, Czech Republic

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Abstract. The preoperative diagnosis of biliary ileus was correctly made by US in two cases (87 and 80-year-old females) referred to US studies because of nonspecific abdominal symptoms and to rule out possible acute appendicitis, respectively. Plain-film findings were unremarkable in one patient; small-bowel obstruction was detected in the latter. In both cases sonography revealed a small amount of air within the thick-walled gallbladder, the presence of mechanical ileus, and a gallstone impacted within the ileal loop. These features, together with collapsed bowel lumen distally to the stone, enabled a reliable diagnosis of biliary ileus to be made. This was confirmed by ensuing laparotomy, when a large cholesterol stone was removed in both cases.

Key words: Ultrasonography – Biliary ileus – Intestinal obstruction

Introduction

Biliary ileus is a mechanical bowel obstruction caused by impaction of one or more gallstones, most commonly in the distal ileum. Until now the diagnosis has been made by contrast examination and/or plain-film findings [1–3]. Ultrasound features of this disease have been reported in a few patients only [4–8]. Two other cases of biliary ileus correctly predicted preoperatively by US are described. In addition, to help differentiate US findings in gallstone ileus from extrinsic bowel obstruction two examples of the latter etiology are illustrated.

Case reports

Case 1

An 80-year-old woman with a history of cholecystopathy was admitted for nonspecific symptoms and suspected ileus. An abdominal plain film revealed clear-cut small-bowel obstruction with no evidence of lithiasis nor lucency suggesting the presence of gas within the biliary tract. Upon sonography (Toshiba SSA-250A, Toshiba Medical Systems Europe, The Netherlands) small-bowel dilatation with signs of mechanical ileus was noted. A 3-cm stone was found to be impacted in an ileal loop in the pelvis (Fig. 1a), and at this very site the small-bowel dilatation abruptly ceased. A small thick-walled gallbladder with small amounts of air (Fig. 1b) but no signs of aerobilia within the liver were visualized. Upon laparotomy a cholesterol stone located as indicated by sonography was removed. No attempt was made to perform cholecystectomy. The patient recovered uneventfully.

Case 2

An 87-year-old woman with a history of cholecystopathy was admitted for suspected senile acute appendicitis. An abdominal plain film obtained upon admission was unremarkable, and the patient was referred to US. Upon sonography (Toshiba SSA-100A, Toshiba Medical Systems Europe, The Netherlands) the appendix was not visualized; however, slightly dilated small-bowel loops (up to 32 mm) with increased intraluminal fluid but preserved peristaltic activity were noted. A 4-cm stone was found to be impacted within the distal ileal loop (Fig. 2). The colon was of normal calibre. A small thick-walled gallbladder with tiny air-bubbles passing (in real-time) into it from an adjacent bowel loop was found. Again, no air was noted in the hepatic bile ducts. Upon surgery a 3-×5-cm cholesterol stone was removed from the distal ileum. The gallbladder was
Fig. 1. a Transverse scan at the lower abdomen intersecting two mildly dilated parallel small-bowel loops (IL; the proximal one being actually the distal part of the jejunum; note the difference in the height and number of valvulae conniventes). The gallstone (K) is clearly depicted. b Oblique scan through the gallbladder fossa. Air is seen proximal to a residual gallstone (K) within the thick-walled gallbladder. The common bile duct (CBD) is noted to be slightly dilated.

Fig. 2. Transverse scan through the lower abdomen. Dorsal to the dilated ileal segment a concrement (hyperechoic mass with distal shadowing; arrow) is seen impacted within another ileal loop (intersected obliquely).

Fig. 3. Transverse scan through the right mesogastrium. Two fluid-filled segments are depicted, the first being a dilated small-bowel loop and the second (wrongly labeled IL, as its true origin was not recognized at the time of study) an infarcted long Meckel diverticulum (infarct due to its long-axis volvulus). Note the tapering termination at the twisted site (arrow) as well as mild wall thickening.

Fig. 4. Long-axis scan through the ileal loop (IL at the left) at the point of adhesive-band obstruction (arrow). Although the end of bowel dilatation is much more abrupt than in Fig. 3, the extramural cause can still be discerned. Upon laparotomy an adhesion due to previous gynecological surgery was revealed.