Clinical History:

The patient presented with 24-hour history of abdominal pain in the right hemiabdomen and nausea without vomiting. Blood test revealed elevated infectious parameters. Physical examination was unremarkable except of right-sided abdominal tenderness. Vital signs were normal.

Imaging Findings:

The patient was referred to contrast-enhanced computed tomography (CT) of the abdomen and pelvis (Fig. 1a,b). The scanning showed a distended gallbladder with wall thickening, oedema, pericholecystic inflammatory changes, and poor contrast-enhancement (Fig. 2). The gallbladder appeared to be in an abnormal position, with twisted and narrowed cystic duct. No stones were visible in the gallbladder. There was no dilatation of the common bile duct or intrahepatic bile ducts. Due to the abnormal position and poor wall-enhancement, suspicion of gallbladder torsion was raised. The diagnosis was confirmed at laparoscopic cholecystectomy, where the gallbladder was rotated 720 degrees around the cystic duct and artery. There was almost no adherent tissue between the gallbladder and the liver.

Discussion:

Background: Gallbladder torsion is a rare condition that primarily affects elderly patients with a higher occurrence in female subjects (4:1 female:male ratio) [1]. The gallbladder rotates around its mesentery, compromising the cystic duct and the cystic artery causing gallbladder ischaemia. The aetiology of gallbladder torsion is not known. However, certain anatomical variants regarding gallbladder mesentery is thought to predispose to torsion, and loss of visceral fat and liver atrophy is thought to exacerbate these variants. [1] Spinal deformities have also been associated with gallbladder torsion. [2]

Clinical perspective: Symptoms resemble classic symptoms of cholecystitis, with pain in the upper-right quadrant and elevated infectious parameters. Different imaging techniques may be pursued depending on the tentative diagnosis, commonly ultrasound (US) and CT as the primary modalities. Most cases have been reported diagnosed preoperatively. In the recent years there has been an increase in cases reported diagnosed preoperatively and confirmed intraoperatively. This is most likely due to the improved imaging techniques.

Imaging perspective: Ultrasound often shows wall-thickening and local oedema of the gallbladder. An abnormal or “floating” position of the gallbladder may be present. Some cases have described the presence of gallstones, but it is not believed to be a disposing factor. US findings are often unspecific.
CT signs of gallbladder torsion include wall-thickening, pericholecystic oedema combined with an abnormal position, typically below its normal anatomic gallbladder fossa (Fig. 3a-c)[3]. A whirl sign with a twisted pedicle of the cystic duct and mesentery is a rare but specific sign of gallbladder torsion [4]. In the present case, such a whirl sign was not present.

Outcome: Patients are treated with cholecystectomy. Left untreated, the condition will progress rapidly, result in rupture followed by sepsis, septic shock and death. The prognosis is good with rapid treatment, hence imaging findings of gallbladder torsion should prompt emergency surgery.

Take home message/teaching points: Gallbladder torsion is an important differential diagnosis to consider in elderly patients with right-sided abdominal pain. Symptoms mimic those of simple cholecystitis. Rapid surgery is crucial to avoid perforation.

Written informed consent from the patient’s next of kin has been obtained for publication.

**Differential Diagnosis List:** Gallbladder torsion, Cholecystitis, Acute pancreatitis, Gallstones

**Final Diagnosis:** Gallbladder torsion

**References:**


**Figure 1**

a

**Description:** Local oedema and abnormal position of the gallbladder - axial view

**Origin:** © Department of Radiology, Herlev og Gentofte Hospital/Denmark 2019

b

**Description:** Local oedema and abnormal position of the gallbladder - coronal view

**Origin:** Department of Radiology, Herlev og Gentofte Hospital/Denmark 2019
Figure 2

Description: Local oedema and abnormal position of the gallbladder

Origin: © Department of Radiology, Herlev og Gentofte Hospital/Denmark 2019
Figure 3

Description: Normal expected location of gallbladder – axial view

Origin: © Department of Radiology, Herlev og Gentofte Hospital/Denmark 2019
Description: Gallbladder in abnormal position inferiorly and malrotated compared to expected position
Origin: © Department of Radiology, Herlev og Gentofte Hospital/Denmark 2019
Description: Normal expected gallbladder position (red arrows) – abnormal gallbladder position (blue arrows) Origin: © Department of Radiology, Herlev og Gentofte Hospital/Denmark 2019