

Isolated gallbladder rupture following blunt abdominal injury

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Abstract

Isolated traumatic gallbladder rupture subsequent to blunt abdominal injury is rare. Most literatures on the subjects consist of case reports. We reported a rare case of isolated gallbladder rupture and discussed the possible predisposing factors to gallbladder rupture.

Key words: Abdominal blunt injury, isolated gallbladder rupture, liver cirrhosis

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Introduction

The gallbladder is a well-protected organ, being partially embedded in the liver and covered by the rib cage.^[1] Consequently, trauma-related gallbladder rupture is rare, and usually associated with additional visceral injuries.^[2] Isolated traumatic gallbladder rupture due to blunt abdominal trauma is even rarer. A retrospective review consisting of 1449 patients reported the incidence around 0.067%.^[3] Here, we presented a case of isolated gallbladder rupture following a blunt abdominal injury.

Case Report

A 39-year-old man with history of cholelithiasis, alcoholism-related liver cirrhosis, and chronic pancreatitis

presented to our emergency room (ER) due to being hurt with a blow from a fist on the right upper abdomen 3 h before coming to our ER. At arrival, the vital signs were heart rate 131 beats/min, respiratory rate 34 times/min, and blood pressure 52/29 mmHg. Physical examination showed ecchymosis with size 4 cm × 5 cm over the right hypochondrial region. Besides, diffused muscle guarding and rebound tenderness were also present. Laboratory examination showed white blood cell count 9620/μl, hemoglobin 7.6 g/dL, glutamate oxaloacetate transaminase 155 μ/L, glutamate pyruvate transaminase 84 μ/L, total bilirubin 0.91 mg/dL, direct bilirubin 0.39 mg/dL, prothrombin time 18.5 s (control 10.9 s), partial thromboplastin time 36.3 s (control 27.8 s), amylase 29 μ/L, and lipase 3.8 μ/L. Abdominal computed tomogram showed interrupted gallbladder wall with peripheral hematoma, hemoperitoneum, spillage of gallbladder stones and cirrhosis [Figure 1a]. Exploratory laparotomy was arranged after adequate resuscitation. A perforation

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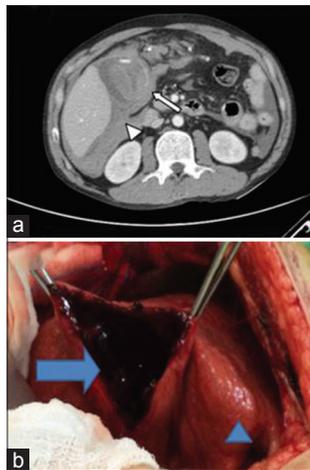


Figure 1: (a) Abdominal computed tomogram showing interrupted gallbladder wall (arrow) with a peri-cholecystic hematoma (arrowhead). (b) Perforation at the fundus and body of the gallbladder and intra-gallbladder hematoma (arrow), liver cirrhosis with uneven surface (arrowhead)

with length about 3 cm at the fundus and body of the gallbladder was found [Figure 1b]. Besides, we also found spillage of gallbladder stones and uneven surface of the liver. A cholecystectomy was performed, and no other visceral injury was noted. Postoperative course was uneventful. This patient was discharged on the 9th postoperative day. There was no abdominal discomfort noted at the out-patient department follow-up subsequently. The histology report of the gallbladder presented chronic cholecystitis.

Discussion

Smith and Soderberg noticed three factors predisposing the gallbladder to rupture, secondary to abdominal blunt trauma.^[4] First, a thin-walled normal gallbladder is more prone to rupture. The fibrotic, thickened wall of the chronically inflamed gallbladder probably makes it less prone to rupture. The second factor is the degree of filling at the time of trauma. It is postulated that gallbladder distention at the time of trauma is a prerequisite for its rupture. The third factor contributing to gallbladder rupture is alcohol ingestion.

A high incidence of traumatic gallbladder rupture is reported in alcohol-intoxicated patients. Alcohol intake enhances gastrin and secretin secretions, which in turn stimulate bile flow, and high serum of alcohol elevates the common bile duct pressure by increasing the sphincter of Oddi's tone.^[2-4]

In our case, he ate nothing 7 h before the injury which resulted in dilatation of gallbladder before he got injured. Besides, he was a patient with a past history of chronic pancreatitis and liver cirrhosis related to alcoholism. Increased pressure of sphincter of Oddi related to alcohol consumption was taken into account.

Besides, the gallbladder is close to the liver, which is a firm organ supplying cushion when encountering shearing acceleration-deceleration force. In contrast, a gallbladder is put on a hard block when the patient has a cirrhotic liver. Considering the difference in mass between the gallbladder and liver, it would seem reasonable to postulate that exposure to acceleration and deceleration forces could result in shearing forces between these two organs.^[3] In conclusion, we reported a rare case of isolated gallbladder rupture and advocated the 4th predisposing factors to gallbladder rupture.

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Conflicts of interest

There are no conflicts of interest.

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