Isolated Gallbladder Injury after Blunt Abdominal Trauma: a Case Report and Review
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Abstract
We describe a case of isolated gallbladder contusion after deceleration trauma. On admission, no evident signs of intra-abdominal injury were present. However, after 24 h observation an explorative laparotomy was performed because of persistent abdominal complaints. A contusion of the gallbladder wall was found with intraluminal haematoma and a cholecystectomy was performed. Isolated injury of the gallbladder after blunt trauma is extremely rare. Risk factors are distention of the gallbladder, deceleration trauma and the presence of a relatively mobile gallbladder. Clinical signs often are very subtle. Delayed presentation is common with signs of hemobilia or obstruction due to intraluminal clots. Ultrasound and computed tomography are suitable diagnostic tools. However, the diagnosis is often missed if no other injuries are present. Signs pointing to gallbladder injury are a collapsed gallbladder with pericholecystic fluid or a hydroptic gallbladder with intraluminal hematoma. Hepatobiliary scintigraphy or angiography might be necessary if additional injuries are suspected. The choice of treatment depends on the kind of injury. Contusion of the gallbladder allows conservative treatment, but in case of a rupture, surgery will be necessary. Accompanying bile duct injuries can be treated by endoscopic stenting. If active arterial bleeding is present, selective embolization can be performed.

Key Words
Gallbladder contusion · Abdominal trauma · Hemobilia
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Case Report
A 41-year-old homeless man was brought to the Emergency Department after falling from a height of 6 m. History taking was unreliable because of the patient being intoxicated by alcohol. Therefore the exact mechanism of the accident remained unclear. The patient complained of upper abdominal pain. Past medical history revealed addiction to illicit drugs, seropositivity for human immunodeficiency virus and a negative explorative laparotomy for a gun shot injury 15 years ago. Medications consisted of methadone, anti-retroviral drugs and an H₂-blocker. On physical examination we found an agitated man with normal vital signs and a maximal Glasgow Coma Score of 15. There was upper right abdominal tenderness on palpation, but no rebound or guarding. The remainder of the physical examination was unremarkable. A chest X-ray revealed no abnormalities. A bedside ultrasound was performed and revealed no intra-abdominal fluid collections or other signs of injury to the liver, spleen, kidneys or aorta.
The pancreas could not be visualized by ultrasound. Laboratory findings revealed a previously known macrocytic anemia (Hb 11.1 g/dl, MCV 133); urinalysis was negative for erythrocytes. Because of the kind of trauma and his abdominal pain, the patient was admitted to the Observation Ward. The following day the abdominal pain persisted; physical examination did not reveal any new findings. The hemoglobin had decreased to 10.2 g/dl. Computed tomography (CT) of the abdomen was performed and showed a Hydroptic gallbladder with intraluminal fluid, possibly due to hematoma (Figure 1); the common bile duct appeared to be widened. The gallbladder wall was not thickened. Liver, kidneys, pancreas and duodenum were normal. There was a small amount of fluid seen pericholecystic as well as in the right paracolic fossa. Subsequently the patient underwent explorative laparotomy to rule out gallbladder perforation. A non-perforated, macroscopically normal gallbladder was found. Further exploration of the abdomen revealed no other injuries. A cholecystectomy was performed and after opening the removed gall bladder a large intraluminal haematoma was seen. Pathologic findings confirmed the diagnosis of hemobilia due to contusion of the gallbladder wall without any signs of perforation or laceration. Postoperatively the patient recovered without any complications and was able to be discharged 5 days after surgery.

**Review of the Literature**

**Epidemiology**

Injury of the gallbladder after blunt trauma is rare. Most cases occur following penetrating trauma [1]. Isolated blunt injury of the gallbladder is practically unknown. Searching relevant English literature, we only found five reports describing isolated gallbladder contusion [2–6].

In general, in 1–3% of patients undergoing laparotomy for blunt trauma, injury to the gallbladder is found [7–9]. This low prevalence may be due to the anatomical position of the gallbladder, being protected by the rib cage and embedded in the right lobe of the liver. This explains the high incidence of other intra-abdominal injuries if gallbladder injury is present. Especially injury to the liver including intra- and extrahepatic bile ducts, spleen and duodenum is found [7–9]. As a consequence, morbidity and mortality of gallbladder trauma will be highly determined by complications of the accompanying injuries. There are, however, complications occurring especially after gallbladder injury. Hematoma of the gallbladder wall can result in local ischaemia leading to necrosis and perforation or so-called “delayed rupture” [8, 10]. Obstructing blood clots can induce a hydroptic cholecystitis, referred to as traumatic cholecystitis [5]. Both conditions will make cholecystectomy necessary.

There seem to be some factors that increase the risk for injury of the gallbladder. Distention of the gallbladder as a result of alcohol ingestion or fasting, leads to a greater vulnerability of the gallbladder for injury [2, 3, 8, 11]. In addition intoxication by alcohol may lead to relaxation of the abdominal wall, which normally offers a certain degree of protection to trauma [12]. The type of trauma, especially blunt trauma due to acute deceleration, is also thought to increase the risk of gallbladder trauma. Acute deceleration may lead to compression of the gallbladder against the spine [8]. Also, tearing of a relatively mobile gallbladder and the extrahepatic ducts can occur [3, 9]. Our case report is an example of such a trauma mechanism, describing an acute deceleration due to a fall from 6 m height.

**Clinical Presentation**

The clinical presentation of contusion of the gallbladder highly depends on the symptoms of accompanying injury to other organs. If, as in our case, no accompanying injury occurred, symptoms can be subtle and limited to slight pain in the upper (right) abdomen. If there is accompanying hepatic injury, hemobilia might be one of