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Case Report

Unusual presentation following blunt trauma abdomen: isolated gallbladder perforation

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ABSTRACT

The gallbladder is a well-protected organ. Hence, injury to the gallbladder following blunt trauma is infrequent. The clinical presentation of gallbladder injury is variable, resulting in a delay in diagnosis and treatment. Isolated gallbladder perforation is a diagnosis of exclusion. Ultrasonography and contrast-enhanced CT are valuable assets in diagnosis. Cholecystectomy remains the procedure of choice. Mortality and morbidity is high in late presentations with biliary and bacterial peritonitis. It is thus necessary that the clinician be aware of this entity to have a high index of suspicion and to treat early.

Keywords: Gallbladder, Perforation, Trauma

INTRODUCTION

The gallbladder is anatomically protected from external blunt trauma. It is partially embedded in the liver substance and covered by the rib cage. Thus, injury to the gallbladder is rare and is usually associated with another visceral injury.[1] Isolated gallbladder following trauma is even rarer. Blunt trauma in the form of blows, kicks are the most common cause of injury.[2] Herein, we report an unusual case of isolated gallbladder perforation following an assault using a hockey stick.

CASE REPORT

A 60-year-old male presented to our emergency room with pain over the right hypochondrium for four days. He had no complains of jaundice or previous history of recurrent hypochondiac pain. He admitted that he was assaulted by a neighbour using a hockey stick five days prior. He was under the influence of alcohol during the incident. He had mild right hypochondriac pain following the assault, which was treated with analgesics by a local GP. He presented to us after four days with an increase in the severity of pain. He had no known comorbidities. On examination, his vitals were stable, and there were no other visible abrasions or injuries anywhere else in the body. There was tenderness and guarding over the right hypochondrium.

Lab parameters were normal. Abdominal ultrasonography revealed a collection around the gallbladder with suspected gallbladder perforation. Contrast-enhanced CT showed a perforation of the body of the gallbladder with a collection of size 2X4cm surrounding it, sealed by the transverse mesocolon (Figure 1A, B). There was no injury to any other organ. On laparotomy, liver and spleen were normal. There was no other organ injury. Mesentery of transverse colon was found stuck to the gallbladder, and adhesions were released, collection around the gallbladder was aspirated. The inferior surface of the body of the gallbladder was found to be gangrenous (Figure 2) along with a small perforation sealed by the mesentery. Cholecystectomy was done. He made an uneventful recovery and was discharged from the hospital seven days after the surgery. Histopathology report confirmed the perforation.

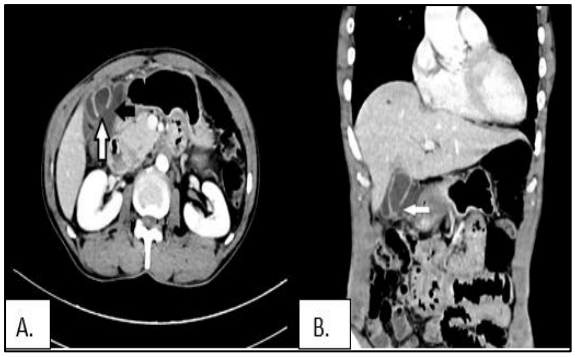

Figure 1: (A) CECT abdomen showing gallbladder perforation (white arrow) and peri-gallbladder collection. (B) Coronal section of CECT abdomen showing gallbladder perforation.

Figure 2: Intraoperative picture of the gangrenous gallbladder.

DISCUSSION

Injury to the gallbladder (GB) following blunt trauma abdomen is a rare occurrence, and isolated injury to the gallbladder is an even rarer complication. Soderstrom et al, in their review, found that gallbladder injuries accounts for 2% of all intraabdominal injuries.[1] This remains the most extensive series till date addressing the GB injuries in blunt trauma abdomen. Owing to the protection offered by the rib cage and it's placement in the liver isolated GB injury is rare.[2]

Most of the injuries occurred following road traffic accidents or direct blows to the abdomen, as in our case. Males are at increased risk of these types of injuries. A thin walled GB us more prone to rupture from blunt trauma than a diseased GB which is thick and fibrotic due to chronic inflammation.[3] GB perforation almost always occurs in a distended GB. Our patient had his last meal about 8 hours before the trauma making him more vulnerable to GB injury. Alcohol intoxication has been found to be a risk factor for GB injury. Alcohol intake enhances gastrin, and secretin secretion, which in turn stimulate bile flow and high serum alcohol levels also increases the sphincter of oddi's tone.[2] These combined effects cause GB distension making it more vulnerable to injury.

Penn et al classified four major types of GB injury: contusion, avulsion, laceration and traumatic cholecystitis.[4] Laceration of the GB is the most common subtype reported among patients with blunt trauma abdomen. Avulsion is the second most common subtype. Traumatic avulsion can be either partial or complete. A complete avulsion is referred to as traumatic cholecystectomy in which the GB lies free in the abdomen, torn from its attachments. Delayed perforation following blunt trauma abdomen can occur following a hematoma of the GB wall developing into an area of necrosis.[5] Our patient had a contusion that leads to gangrene of the GB with perforation, which was concealed. Traumatic cholecystitis is very rare; it occurs due to obstruction of the cystic duct by blood clots.

The diagnosis of GB rupture is very challenging as they present late. In blunt trauma, where the bile is sterile, the resulting peritonitis is chemical. Unless bacterial peritonitis supervenes, generalized biliary peritonitis may be innocuous and hence the patients present late.[3] These patients can present with progressive abdominal distension with fever and abdominal pain. Rarely they can even present with jaundice. The examination would reveal a right hypochondriac tenderness with abdominal distension. X-ray is not very useful in diagnosis. Bile stained aspirate with ultrasound evidence of collection without duodenal, liver and luminal injury points towards GB perforation. Therefore, GB perforation is a diagnosis of exclusion.[6]

Diagnostic tap is not always diagnostic as there are high rates of false-negative results if the collection is entirely retroperitoneal.[7] Ultrasound and CECT are invaluable in diagnosis when there is a bile leak causing sequestration of fluid resulting in mass formation, as in our case. Tc-99m-HIDA scan, Endoscopic retrograde cholangiopancreatography and percutaneous transhepatic cholangiography are found useful in diagnosing bile leak. Nevertheless, their role in the emergency setting in cases of blunt trauma abdomen is questionable.[2] Despite the diagnostic modalities available, these patients were operated on after a considerable delay, as in our case.

Treatment options include expectant observation, drainage, cholecystorrhaphy or cholecystectomy. Cholecystectomy is now considered the treatment of choice.[8] In cases with the early presentation without much contamination, a laparoscopic approach can be attempted.[9] In our case, laparotomy and cholecystectomy were done due to a delay in presentation. Mortality and morbidity following GB injury is due to associated intra-abdominal injuries. However, no death has been reported in patients with isolated gallbladder rupture treated surgically at the earliest.[6]

CONCLUSION

Isolated GB injury is very rare. The mortality rate is high in cases with biliary and bacterial peritonitis. A high

index of suspicion with positive bile tap might lead to early diagnosis. This report highlights the importance of early diagnosis and treatment of GB Injury to reduce the mortality rate.

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REFERENCES

1. Soderstrom CA, Maekawa K, DuPriest RW, Cowley RA. Gallbladder injuries resulting from blunt abdominal trauma: an experience and review. Ann Surg. 1981;193(1):60-6.
2. Schachter P, Czerniak A, Shemesh E, Avigad I, Lotan G, Wolfstein I. Isolated gallbladder rupture due to blunt abdominal trauma. HPB Surg. 1989;1(4):359-62.
3. Gali BM, Ali N, Bakari AA, Suleiman IE. Isolated gallbladder rupture following blunt abdominal trauma. Nigerian Journal of Clinical Practice. 2013;16(3):398.
4. Penn I. Injuries of the gall-bladder. Br J Surg. 1962;49:636-41.
5. Chen X, Talner LB, Jurkovich GJ. Gallbladder avulsion due to blunt trauma. AJR Am J Roentgenol. 2001;177(4):822.
6. Sharma O. Blunt gallbladder injuries: presentation of twenty-two cases with review of the literature. J Trauma. 1995;39(3):576-80.
7. Laffey DA, Hay DJ. Isolated perforation of the gall bladder following blunt abdominal trauma. Postgrad Med J. 1979;55(641):212-4.
8. Bainbridge J, Shaaban H, Kenefick N, Armstrong CP. Delayed presentation of an isolated gallbladder rupture following blunt abdominal trauma: a case report. J Med Case Reports. 2007;1:52.
9. Kohler R, Millin R, Bonner B, Louw A. Laparoscopic treatment of an isolated gallbladder rupture following blunt abdominal trauma in a schoolboy rugby player. Br J Sports Med. 2002;36(5):378-9.

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