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Case Report

Isolated and stable gallbladder perforation in a 5 year old child after blunt abdominal trauma

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ABSTRACT

Isolated gallbladder injury, secondary to a blunt abdominal trauma, is a rare finding in children. The presence of vague symptoms and the unknown dynamic of the trauma may increase the diagnostic challenge especially in pediatrics.
A conservative management has been proposed in some particular cases in adults, but remains controversial in children.
We report a case of a 5 year old boy who presented an isolated gallbladder lesion secondary to a blunt abdominal trauma.
The surgical treatment was delayed for non-medical reasons, which gave us the possibility to try a conservative approach.

Case report

A 5 years old boy with unremarkable previous medical history was transferred to our center, from another hospital, for the management of a blunt abdominal trauma.

He was the victim of an accidental bicycle crush, in which he got a head trauma and the handlebars hit his epigastrium. He was admitted to another facility 2 days before admission. A brain CT scan was done and no abnormalities were detected.

Ultrasound of the abdomen and pelvis showed the presence of free peritoneal fluid, and an abdominal CT scan demonstrated a distended gallbladder containing low-density material of mixed signal intensity consistent with blood between the internal and external wall (Fig. 1). A laparotomy was proposed.

The parents refused to give consent to the proposed procedure and he was transferred to our hospital for further management.

At his arrival to our department, the child was suffering from diffuse abdominal pain and vomiting, without any localized tenderness on physical exam or abdominal distention. He was having normal bowel movement, was hemodynamically stable and afebrile.

His laboratory tests showed the absence of anemia (Hb 12.1 g/dL, Hct 37%) or any significant elevation of his liver and pancreatic function tests (ALT 47 U/L, AST 37 U/L, direct bilirubin 0.4 mg/dL, indirect bilirubin 0.9 mg/dL, amylase 34 U/L, lipase 9 U/L, ALP 135 U/L, GGT 16 U/L, normal PT and PTT).

Amoxicillin/clavulanic acid (100 mg/kg/day) was started IV (WBC 16.400/μL, N 86.1%, L 4.8%, M 8.6%, E 0%, B 0.3%, C reactive protein 15 mg/L, procalcitonin 1.21 ng/mL).

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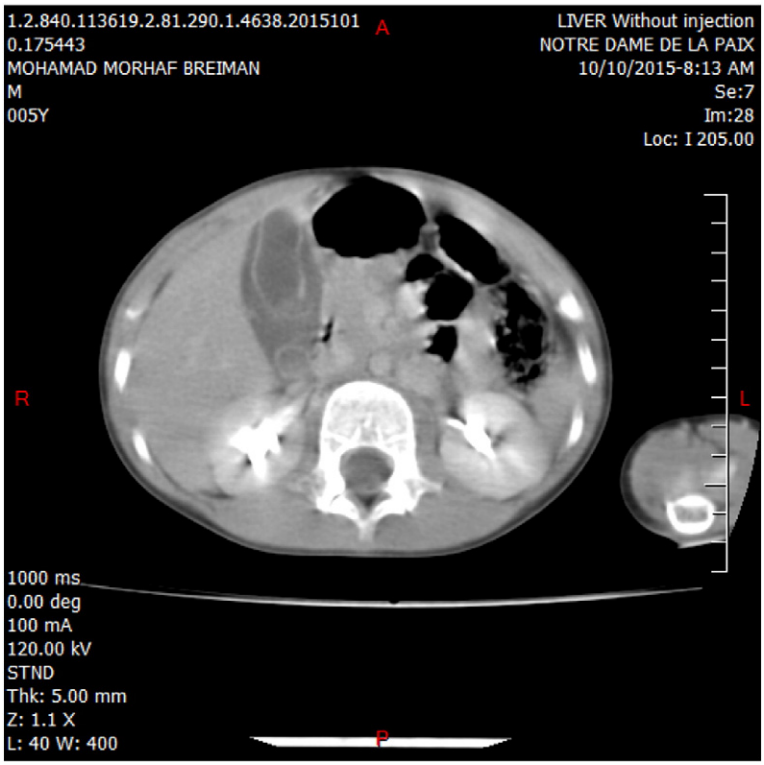

Fig. 1. Computed tomography without injection showing the presence of gallbladder distention and intra parietal fluid of low density.

Repeat abdominal ultrasound and CT scan confirmed the presence of a dilated gallbladder with echogenic sludge and a peritoneal fluid around the gallbladder and in the Douglas space.

MRI cholangiography showed the above findings without apparent perforation of the gallbladder (Fig. 2).

To rule out a gallbladder laceration, laparotomy and cholecystectomy were proposed. For the second time the parents refused the operation. Since the patient was clinically stable, we elected to observe him in hospital.

On day 6 post trauma, the child was still complaining of diffuse abdominal pain. An echo-guided abdominal needle aspiration of the peritoneal fluid showed the presence of bile in the abdomen, which confirmed the suspicion of gallbladder perforation.

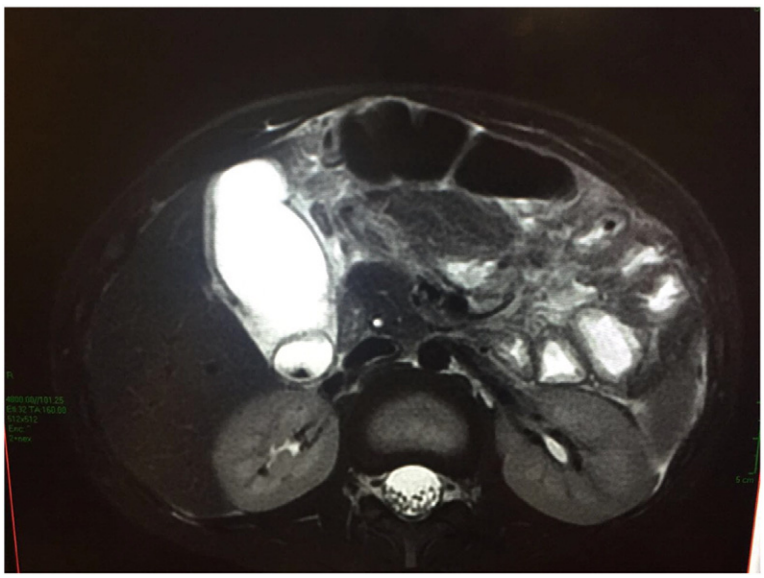

Fig. 2. T2 weighted sequence in MRI cholangiography showing gallbladder hematoma with peritoneal fluid around the gallbladder.

Abdominal laparotomy was performed then, and revealed a 2 cm perforation of the posterior wall of the gallbladder with necrotic edges plugged by the liver. A cholecystectomy in addition to a peritoneal cavity lavage was performed.

He was discharged on day 3 post surgery without complications.

Discussion

In adults, gallbladder injury secondary to blunt abdominal trauma is very rare, occurring in approximately 2% of cases. Generally they are associated with other organ injuries as liver or spleen. In children, isolated gallbladder injury is rare if not exceptional [2–3]. This very rare incidence is due to its anatomical protection by the liver, intestines, omentum and rib cage [3–4]. In most cases, isolated gallbladder injuries are due to blunt abdominal trauma directly to the epigastrium (bicycle crash, ATV crash, trampled by bull, pedestrian struck, non-accidental trauma, struck by falling object and motor vehicle crash) [2]. The ingestion of alcohol or a distended post-prandial gallbladder could represent pre-disposing factors [6].

There are three possible types of blunt traumatic gallbladder injuries: contusion, avulsion and laceration.

Contusion is an intramural hematoma that can contribute to wall necrosis and secondary delayed perforation. Due to the lack of acute signs and symptoms, diagnosis is usually late. Avulsion is the most severe injury and it could be partial or total with or without extension to the cystic duct or the cystic artery. Laceration, which can evolve to perforation, usually affects the gallbladder fundus [6–8]. Sometimes the diagnosis could be delayed because the signs and symptoms are vague [4,9].

The real incidence of post trauma isolated gallbladder lesions in children is not really defined.

In a recent retrospective review of patients with biliary tract injury conducted from 2002 to 2012: 13,582 trauma patients were identified and only 12 patients presented with biliary injury. Between them, only two cases (0, 01%) presented an isolated gallbladder injury with a median age of 14.5 years and in both cases the treatment was an immediate laparotomy with cholecystectomy [5].

The diagnosis of gallbladder perforation could be very difficult because of its low index of suspicion.

Ultrasound can be useful especially for identification of blood within or surrounding the gallbladder. CT scan is much more accurate and in equivocal cases, MRI could detect the presence of gallbladder wall discontinuities [5].

Although conservative measures have been reported when dealing with adults (cholecystostomy, percutaneous radiological intraperitoneal drainage or cholecystography), cholecystectomy remains the gold treatment [2,6].

Our case was unusual for different reasons. It represents the youngest age of isolated gallbladder injury reported in literature and the only one published about initial conservative treatment. The clinical stability of the patient, in the absence of a real acute abdominal presentation, could be explained by the presence of a gallbladder perforation that affected only the posterior wall and that probably had been contained and limited by the liver.

The delay of surgery without complications may lead to the question: Could we treat this case conservatively?

Conclusion

Although abdominal trauma is very frequent in children, secondary isolated gallbladder injury is very rare. Cholecystectomy remains the definitive treatment for gallbladder injuries till nowadays. Further studies are required to see if conservative management in stable children is valid.

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