

Isolated Ileum Perforation Following Veal Attack in a Patient with an Undiagnosed Inguinal Hernia: Case Report and Review of the Literature

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Rezumat

Perforație izolată de ileon după traumatism abdominal nepenetrant minor (lovitură de vițel) la un pacient cu hernie inghinală nediagnosticată - raportare de caz și recenzie a literaturii

Vă prezentăm un caz rar al unui pacient de sex masculin în vârstă de 74 de ani, care a fost internat în cadrul departamentului nostru după un traumatism abdominal nepenetrant minor (lovitură de vițel). Acușele pacientului au fost durere localizată la nivelul flancului stâng și regiunii inferioare abdominale. Abdomenul inferior era în ușoară tensiune, moderat destins dar fără rigiditate. Prezenta, deasemenea, o hernie inghinală stângă necomplicată. Datorită stabilității hemodinamice, am efectuat un examen CT, care a evidențiat pneumoperitoneu. După o oră și jumătate de la internare, s-a intervenit chirurgical, evidențindu-se perforație antimesenterică izolată de ileon, situată la 120 cm de valva ileocecală. S-a realizat închiderea simplă într-un singur strat a perforației. Hernia inghinală nu a fost abordată în cadrul primei intervenții chirurgicale. Evoluția postoperatorie a fost favorabilă, pacientul fiind externat în ziua postoperatorie 8.

Cuvinte cheie: traumatism abdominal nepenetrant, perforație izolată de ileon

Abstract

We present a rare case of a 74 year old man admitted by ambulance to our department following a blunt minor abdominal trauma (veal attack). He complained of pain in the left abdominal flank and in the lower abdomen. The lower abdomen was tender, moderate distended but not rigid. He also had a left inguinal uncomplicated hernia. Because he was hemodynamic stable we performed a CT – scan who revealed several pockets of free air anteriorly in the midline. One hour and a half after admission the patient underwent exploratory laparotomy, revealing a antimesenteric perforation of the ileum about 120 cm from the ileo-cecal valve. Simple closure in one layer was performed. The inguinal hernia wasn't repaired at the time of the first surgery. The postoperative course was favorable, the patient being discharged on the 8th postoperative day.

Key words: blunt abdominal trauma, isolated ileum perforation

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Introduction

The small bowel is currently the third most common injured viscera following blunt abdominal trauma. When occurring, the small bowel injuries, are most commonly accompanied by other injuries, which make it more difficult to diagnose.

Failing to diagnose and the deferment in treating these injuries meaningfully increase the morbidity and mortality. The presence of inguinal hernia is a major factor contributing to the ileal perforation after blunt abdominal trauma. Such a happening may occur, regardless of whether the force is applied to the inguinal area or at a distance from it.

Case report

A 74 year old man was admitted to the department of the General Surgery of emergency hospital Floreasca after being attacked by a calf. He was brought by ambulance 2 hours from the attack. At the arrival the patient was hemodynamic stable with the blood pressure of 125/71 mmHg and the heart rate of 88 beats per minute. The patient did not have any co-morbidities or abdominal operations in his history. At the local examination the patient had discrete painful abdomen with the maximum of intensity in lower abdomen and in the left flank. The lower abdomen was tender, moderate distended but not rigid. No exterior signs were visible. He also had a left inguinal uncomplicated hernia. We initial performed laboratory tests who revealed leukocytes (11900/uL). The remaining blood tests were normal. The abdominal X-ray in standing position didn't show the presence of free intraperitoneal air. The chest X-ray was normal. Abdominal ultrasonography revealed a small amount of free intraperitoneal fluid in the absence of solid abdominal organ injury. In spite of fluid resuscitation and analgesia the pain exacerbated. Being hemodynamic stable and not having a diagnosis we decided to performed a CT - scan of the abdomen – pelvis with contrast material administered orally and iv. The CT – scan showed several pockets of free air anteriorly in the midline and free intraperitoneal fluid localized on the convex face of the spleen (9 mm), in the left abdominal flank, around jejunal loops (15 mm) and in the iliac fossa (15 mm). One hour and half after admission and 3:30 hours after the veal attack the exploratory laparotomy was performed. The intraoperatively findings were peritoneal fluid in high volume (about 2 liters of enteral fluid) and a antimesostenic perforation of the ileum about 120 cm from the ileo-cecal valve. The rest of the intraperitoneal organs were macroscopic normal, no other injuries were found. Simple closure of the perforation in one layer was performed. It was used separate absorbable threads. Abdominal cavity lavage was performed with 6 liters of warm saline. Also pelvic drainage was established. The inguinal hernia wasn't repaired. The postoperative course was favorable, the patient being discharged on the 8th postoperative day. Two months after the first intervention we performed Lichtenstein inguinal hernia procedure.

Discussion

In 1837 the first case of intestinal perforation due to blunt abdominal trauma was reported by Samuel Annan (1). Nowadays we know that the abdomen is the third most joint area which suffers blunt injuries, and up to ¾ quarters of

these injuries are owed to road traffic accidents (2). The small bowel is currently the third most common injured viscera in blunt abdominal trauma (frequency beeing smaller than 5%), following the frequency of liver and spleen (3). When the intestinal lesions appear, they are usually accompanied by other ones (4). Isolated ileum perforation due to blunt abdominal trauma in patients with inqual hernia are rare injuries. The presence of inguinal hernia is a major factor contributing to the ileal perforation. Such a happening may occur, regardless of whether the force is applied directly or indirect, by muscular contraction, whether it is applied to the inguinal area or at a distance from it (4). Any sudden rise in intra-abdominal pressure in a normal intact abdomen from a blunt trauma tends to be transmitted equally throughout the bowel without creating any site of weakness.

The inguinal hernia allows an orifice which lends little or no support to the part of the intestinal loop that is adjacent to it, creating a site of weakness and favoring tearing of the intestinal wall by the unexpected increased abdominal pressure (inguinal hernia sac empty – fig. 1).

An other possible mechanism is when the bowel loop is in the hernia sac at the time of the sudden increase of the intra-abdominal pressure (reducible inguinal hernia - bowel within the sac – fig. 2) (4).

A third case could be that of a sheering effect applied to a fixed loop and its mesentery between two points (bowel fixed at two points – fig. 3).

The last mechanism described is the most common one in perforation of the small bowel associated or not with inguinal hernia after blunt abdominal trauma. It is difficult to say which mechanism is most appropriate in our case. As long as the patient didn't complained of any symptoms in his medical

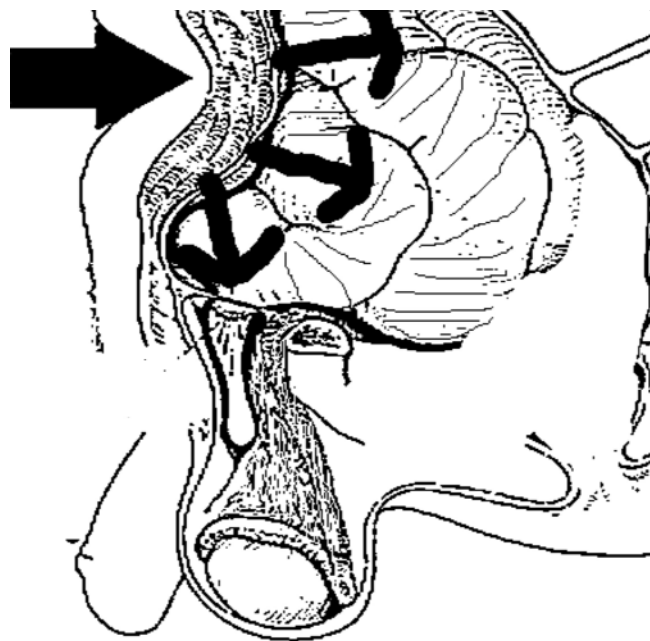


Figure 1. Inguinal hernia sac empty

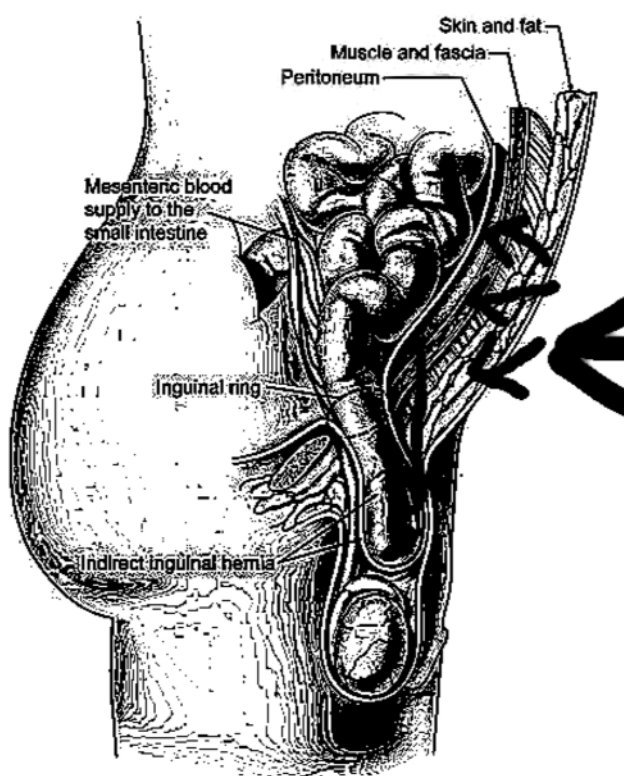


Figure 2. Reducible inguinal hernia - bowel within the sac

history (uncomplicated inguinal hernia) and he didn't know that he had an inguinal hernia, we tend to believe that the first mechanism fits best.

Usually in most cases the symptoms are those of a spreading peritonitis - lower abdominal tenderness, spasm and rebound tenderness. In our case the patient was admitted to the department of the General Surgery of the emergency hospital Floreasca after being attacked by a calf by ambulance after 2 hours from the attack. The symptoms appeared quickly. It has been demonstrated that delay in presentation affects outcome following small bowel injury (6). The abdominal X-ray in standing position didn't show the presence of free intraperitoneal air. Abdominal ultrasound, being a cheap, readily, non-invasive and available investigation was also performed. The diagnostic value of abdominal ultrasound in blunt abdominal trauma is great in detecting free intraperitoneal fluid (7). In this case, abdominal ultrasonography revealed free intraperitoneal fluid in the absence of solid abdominal organ injury. Diagnostic peritoneal lavage wasn't used in this case even if some studies reported that it can be a useful adjunct to CT (8). Being hemodynamically stable we also performed a CT - scan of the abdomen - pelvis with contrast material administered orally and iv. The main findings of CT in perforated small intestine are the presence of free intraperitoneal contrast

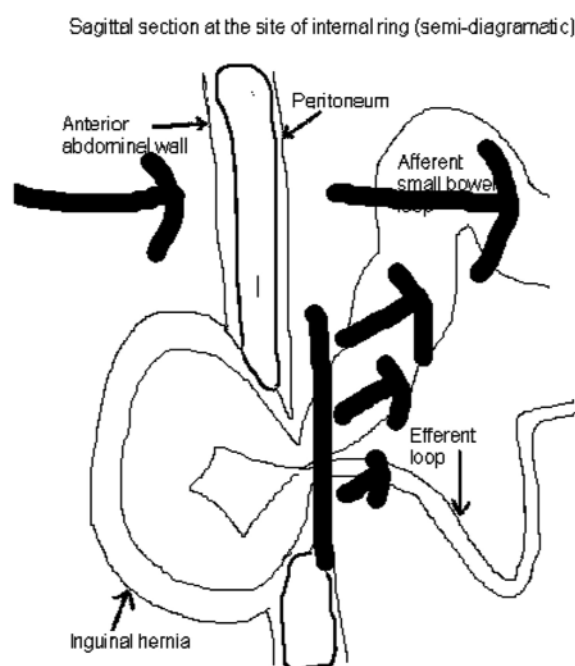


Figure 3. Bowel fixed at two points

fluid allocated per os, the thickening of the wall and of course the presence of free intraperitoneal air (9). In our case the CT - scan showed several pockets of free air anteriorly in the midline and free intraperitoneal fluid localized on the convex face of the spleen (9 mm), in the left abdominal flank, around jejunal loops (15 mm) and in the iliac fossa (15 mm). Intraperitoneal free air occurs in less than 50% of the cases (10). Although it was impossible to highlight the presence of free intraperitoneal contrast fluid allocated per os, the presence of free intraperitoneal air was a categorical indication to perform an exploratory laparotomy. Early surgical treatment offers good prognosis. The intraoperative findings were peritoneal fluid in high volume (about 2 liters of enteric fluid) and an antimesenteric perforation of the ileum about 120 cm from the ileo-cecal valve. The rest of the intraperitoneal organs were macroscopically normal. Simple closure of the perforation in one layer was performed. It was used separate absorbable threads. Abdominal cavity lavage was performed with 6 liters of warm saline. Also pelvic drainage was established. Simple closure of perforated small bowel after blunt abdominal trauma is a well established procedure with minimal complications (11). The postoperative course was favorable, the patient being discharged on the 8th postoperative day. The left uncomplicated inguinal hernia wasn't repaired at the time of the first surgery. Due to the presence of peritonitis, hence the impossibility to perform an alloplastic repair, we chose to execute a Lichtenstein inguinal hernia procedure two months after the initial intervention.

Conclusion

To the best of our knowledge this is the first case of anti-mesenteric isolated ileum perforation occurring after minor blunt abdominal trauma (veal attack) in a patient with an undiagnosed and uncomplicated inguinal hernia. The association between inguinal hernia and minor blunt abdominal trauma may result in injuries that normally not appear. Therefore in the management of nonpenetrating abdominal trauma the significance to determine the existence of an inguinal hernia becomes a primary responsibility of the clinician. A high degree of suspicion can give rise to early diagnosis and treatment which offer good outcome.

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