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ISOLATED JEJUNAL PERFORATION AFTER BLUNT TRAUMA. REPORT OF THREE CASES.

General Surgery

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ABSTRACT

Small bowel perforation occurs in 3% to 5% of cases of blunt abdominal trauma. The initial clinical exam can be unremarkable because signs of hollow viscus injury (HVI) may take time to develop. Conventional radiograms are often unable to diagnosis of this subset of trauma. Three cases of jejunal perforation after a blunt abdominal trauma are described.

KEYWORDS

INTRODUCTION

Trauma or injury has been defined as damage to the body caused by an exchange with environmental energy that is beyond the body's resilience. [1] Trauma remains the most common cause of death for all individuals between the ages of 1 and 44 years and is the third most common cause of death regardless of age.[1,2] The abdomen is a diagnostic black box. Abdominal injury is a significant cause of morbidity and mortality; expedient diagnosis and treatment of intra-abdominal injuries are essential to prevent morbidity and death.[1] Isolated jejunal perforation caused by blunt abdominal trauma is uncommon and most often seen after motor vehicle accidents[3]. The first case of intestinal rupture secondary to blunt trauma was reported by Samuel Annan in 1837. [8] IJP occurs in less than 1% of blunt trauma patients.

CASE REPORT

case 1

A 30-year-old male was admitted in emergency department with a history of blunt abdomen traumas (BATs) following road side accident for the last 1 day. While he was riding a bike met with accident and handle of the bike has hit the umbilical region. After that, he developed pain in the abdomen. On examination, the abdomen was tender around the umbilicus and gaurdening was present in epigastric and left hypochondrium. No bruises or other external injuries were noted. Except for pain abdomen and tachycardia, there was no other positive finding. Erect X-ray abdomen did not show any air under the diaphragm. But as there was history of trauma, pain abdomen, absent bowel sounds, and tachycardia, the patient was monitored closely. Patient was put on intravenous fluids. Ultrasound abdomen showed fluid. As it was bilious in nature, for conferming the diagnosis ct scan were performed and suggestive of bowel perforation and collection in the left hypochondrium around the spleenic area. Urgent laparotomy was done and the abdomen was found to be filled with bilious fluid. There was a single IJP of size 1 cm × 1 cm at antimesenteric border, about 30 cm away from the Ligament of Treitz. Perforation was closed in two layers. Drains were put in and the abdomen was closed after saline wash. Postoperatively, the patient behaved well and was discharged after 10 days.

case 2

A 16-year-old male was admitted to the emergency department with intense abdominal pain caused by blunt trauma abdomen. No bruises or other external injuries were noted on his physical examination. Palpation revealed abdominal tenderness and guarding, and auscultation was marked by the absence of bowel sounds. Vital signs were normal. Blood tests and urine analysis showed leukocytosis. The blood hemoglobin concentration was normal. The erect chest radiograph did not show the presence of any free air under the diaphragm. Abdominal ultrasound was negative for free fluid. The patient was admitted and underwent ct scan suggested of collection in lessor sac suspected jejunal perforation. patient was taken for Urgent laparotomy and found to be filled with bilious fluid. There was a single IJP of size 1 cm × 1 cm at antimesenteric border, about 40 cm away from the Ligament of Treitz . Perforation was closed in two layers. Drains were put in and the abdomen was closed after saline wash. Postoperatively, the patient behaved well and was discharged after 10 days.

case 3

A thirty years-old male was admitted to emergency department with a history of accidental fall from bed to ground one day before. He was admitted one month back and operated for tuberculous abdomen and illeostomy was made at that time and patient was uneventful for 20 days .Now he present to us with stool coming from wound and illeostomy was not functioning. immediately patient was admitted and advised ultrasound of abdomen and pelvis which revealed diffusely oedematous jejunal loops, minimal ascites with internal septation due to duodenal or jejunal perforation. There were signs of generalised peritonitis.

On admission to our hospital, 24 hours post trauma, patient was febrile and he looked toxic with signs of dehydration. Physical examination revealed pulse 124 beats/min and blood pressure was 90/70 mmHg. No bruises or other external injuries were noted. Abdominal examination revealed distension of abdomen with tenderness and guarding all over the abdomen. Shifting dullness was present and bowel sounds were absent.

Routine blood investigations were done which were within normal limits other than raised total leucocyte count which was 3600/mm^3 and decreased serum sodium which was 130 mmol/lit.

Urgent laparotomy was done and the abdomen was found to be filled with bilious fluid. There was a single IJP of size 1 cm × 1 cm at antimesenteric border, about 30 cm away from the Ligament of Treitz. Perforation was closed in two layers. Drains were put in and the abdomen was closed after saline wash. Postoperatively, the patient behaved well and was discharged after 10 days.

DISCUSSION :

Due to rapid urbanization, the incidence of cases of blunt abdominal trauma has increased.[5] If patient is taken to hospital as early as possible (within golden hours) after trauma, it can decrease patient's morbidity and mortality.[7] Seventy-five percent of BATs are caused by motor vehicle accidents and the rest by other modes. [6,8] Jejunal perforation due to other injuries are: hit by knee, assault by animal (as in our case), and injury with a bicycle handle bar. Single IJP occurs in less than 1% of blunt trauma patients. [9]

Mechanisms of small bowel disruption with blunt trauma include shearing forces, compression between the abdominal wall and vertebral column, and blowout injury due to a sudden increase in intraluminal pressure of bowel loop. [10] The incidence of small bowel injury appears to be lower in children than in adults.[8] For the early diagnosis of IJP, detailed history (mechanism of injury) and frequent clinical examination of the abdomen are extremely useful, particularly in unconscious patients with other associated intra-abdominal solid

organ injuries. Continuous abdominal pain (75.6%), tenderness (46.7%), and a bruise across the abdomen inflicted by a seat belt (seat belt sign) are the important clinical signs of small bowel perforation. [10]

These injuries pose a diagnostic dilemma. Clinical signs are usually vague and nonspecific. Abdominal pain is the most frequent symptom, and in 64% of cases, there are no bowel sounds (as in our case). As delayed perforations can occur after abdominal trauma, prolonged observation and repeated examination upto 72 h are mandatory for proper diagnosis, because BAT causes compression necrosis of the wall of gut, and due to high intraluminal pressure, there may be blowout perforation subsequently.

Only physical examination is not sufficient for the diagnosis, and it was reliable in only 30% of blunt trauma injuries. In the early hours of injury, less than 50% of the cases show free air, thus limiting the usefulness of erect X-ray chest or abdomen film (as in our case).

Apart from physical examination, there are four methods for diagnosis of bowel perforation: diagnostic peritoneal lavage (DPL), computed tomography (CT) scan, focused abdominal sonography for trauma (FAST), and diagnostic laparoscopy. Sometimes, DPL is more sensitive than CT imaging for diagnosis of isolated jejunal injury in the early hours; however, in many cases, it results in nontherapeutic laparotomy. Several authors have reported that DPL is an important adjunct in cases where isolated jejunal injury is suspected. In late hours of injury, FAST and CT are better than DPL. FAST is readily available, reliable, repeatable, and radiation-free diagnostic tool. No doubt, CT scan is the gold standard for assessment of blunt trauma, with a sensitivity of 92%, specificity of 94%, positive predictive accuracy of 30%, negative predictive accuracy of 100%, and overall accuracy (validity) of 94%, but has got limited role in the early hours of injury and in hemodynamically unstable patients.

The role of laparoscopy in BAT is diagnostic as well as therapeutic in hemodynamically stable patients. Early diagnosis and timely surgical intervention offer the best prognosis.

Open surgical repair or laparoscopic repair is the first line of treatment. Septic peritoneal collection is drained and saline lavage is done. Simple two-layer closure is usually adequate for single perforation of the small intestine (as done in our case).

Although the impact of operative delays on morbidity and mortality has been unclear, a brief delays as little as 8 h can result in increased morbidity and mortality in "missed" small bowel injury. [6] If small bowel perforation is treated earlier than 12 h, then the rate of complication and mortality is low. Vigilant observation, serial physical examinations, and serial abdominal ultrasound will help in the early diagnosis of obscure single IJP in BAT. [6]

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