CASE REPORT

Early and delayed presentation of traumatic small bowel injury

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SUMMARY

Traumatic small bowel injury (TSBI) is rare and presents in only 1% of patients following blunt trauma. Delay in diagnosis can result in significant morbidity so a high index of suspicion is required in patients with abdominal injuries and a significant mechanism of injury. We discuss three cases of TSBI with varying presentations, and discuss their investigation and treatment.

BACKGROUND

These three cases presented to our institution in a short period of time. They represent the diverse presentation and potential delayed complications of traumatic small bowel injury (TSBI). They serve as an important reminder of this potentially serious complication of trauma and the management options.

CASE PRESENTATION**Case 1**

A 17-year-old boy fell from a motocross bike while racing and his abdomen was then ridden over by a fellow competitor. Examination revealed tenderness and an obvious tyre mark across the upper abdomen. CT scan showed thickened proximal small bowel in keeping with contusional injury and a contusion of the left kidney (figure 1). He was admitted for serial examination and discharged following repeat imaging, which confirmed improvement in the previous findings.

Case 2

A 21-year-old man was a restrained passenger in a high-speed road traffic accident. He reported severe abdominal pain and a seatbelt mark was evident across his mid abdomen. CT scan showed free fluid, stranding of the small bowel mesentery and dilated proximal small bowel. He proceeded to laparotomy where two small bowel perforations were identified and this section resected. Bleeding from the terminal ileum mesentery was oversewn. The patient made a slow recovery due to postoperative ileus but was discharged without major complication.

Case 3

A 32-year-old man was a restrained driver in a high-speed road traffic accident. He reported minimal abdominal pain and no obvious injuries were identified on examination. He was discharged following 24 h of observation but presented 10 days after initial injury with colicky abdominal pain and vomiting. CT scan at this stage confirmed mesenteric inflammation and small bowel

obstruction but no free intra-abdominal fluid (figure 2). Conservative management was undertaken and symptoms settled with fasting and nasogastric tube decompression. The patient presented again 23 days following injury, with similar symptoms. At this stage he was taken to theatre and laparotomy showed a mesenteric haematoma causing small bowel obstruction. The affected section was resected and he made an uncomplicated recovery.

DISCUSSION

Small bowel injury is a rare but feared complication of trauma. The presence of TSBI significantly increases mortality rates even when injury severity score is considered.¹ Perforation is reported in 0.3%¹ of patients with blunt abdominal trauma and poses significant diagnostic difficulties. Large studies have found CT was false negative in 13–15%^{1 2} of traumatic small bowel perforation. A high degree of clinical suspicion is necessary based on mechanism of injury and clinical findings. Abdominal tenderness, the presence of a seat belt mark and a Chance fracture of the lumbar spine have all been associated with traumatic small bowel perforation.¹ Delay of repair beyond 24 h is associated with higher morbidity and a threefold increase in mortality.¹

Small bowel obstruction following trauma has been reported weeks to years after injury.³ Various mechanisms have been proposed including mesenteric haematoma formation or stricturing secondary to local ischaemia.³ Localised or short-lived ischaemia that does not lead to necrosis can result in

Figure 1 CT of the abdomen showing thickened jejunal loops.

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Figure 2 CT of the abdomen showing small bowel obstruction and mesenteric haematoma.

chronic inflammation and fibrosis.⁴ This can be managed conservatively but may ultimately require resection of the obstructed segment, as in this case. Delayed perforation after TBSI has also been described months after injury.⁵ A similar mechanism of mesenteric haematoma and local ischaemia leading to eventual perforation as opposed to stricture formation has been suggested.

A high degree of clinical suspicion regarding TSBI is required when treating patients with blunt abdominal trauma. CT scans can aid in diagnosis, although there is a significant false-negative rate for detecting perforation. These cases illustrate the diverse presentations and possible operative or conservative management of the injuries. Patients not requiring immediate laparotomy for peritonitis, haemodynamic instability or other injuries may be managed conservatively. However, the potential for delayed small bowel obstruction or perforation should be borne in mind and patients counselled regarding these possible sequelae. The use of laparoscopic techniques in emergency general surgery has been described for both diagnosis and definitive treatment, including the relief of small bowel obstruction due to adhesions.⁶ With the development of technology and technical skills, this has the potential to be further extended to trauma patients in the future.

Learning points

- ▶ A high degree of clinical suspicion regarding traumatic small bowel injury (TSBI) is required when treating patients with blunt abdominal trauma.
- ▶ CT scans can aid in diagnosis, although there is a significant false-negative rate for detecting perforation.
- ▶ These cases illustrate the diverse presentations and possible operative or conservative management of the injuries.
- ▶ Patients not requiring immediate laparotomy for peritonitis, haemodynamic instability or other injuries may be managed conservatively.
- ▶ The potential for delayed small bowel obstruction or perforation should be borne in mind and patients counselled regarding these possible sequelae.

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