

Acute abdomen after deceleration trauma

R. Hoekstra¹, D.J.A. Sonneveld², W.G. Meijer^{1*}

¹Departments of Internal Medicine and ²Surgery, Westfriesgasthuis, Hoorn, the Netherlands,
*corresponding author: tel.: +31 (0)229-25 72 62, fax: +31 (0)229-25 70 69,
e-mail w.g.meijer@westfriesgasthuis.nl

CASE REPORT

An 86-year-old female presented at the emergency room with abdominal pain, nausea and vomiting. She had been without symptoms until she fell on her buttocks one hour before. The pain gradually increased with time. She had no fever, diarrhoea or blood loss.

Her medical history revealed a hysterectomy and several fall accidents. Because of constipation she used macrogol if necessary.

On examination she was an ill-looking lady in obvious pain. Pulse rate, temperature and blood pressure were within the normal range. There was no audible peristalsis over her abdomen, all regions were extremely painful with guarding and rebound tenderness. Abdominal pain precluded rectal digital examination and optimal examination of the lower extremities.

Laboratory results showed normal values for C-reactive protein (CRP), erythrocyte sedimentation rate (ESR) and leucocytes. Serum amylase was slightly elevated (183 U/l, upper normal limit (UNL) is 50 U/l), lactate was 2.4 mmol/l (UNL 2.2 mmol/l) and glucose 11.2 mmol/l (UNL is 6.4). The urine sample revealed no abnormalities.

Plain radiography showed no abnormalities of the chest and abdomen. No fractures were evident on skeletal radiography of lumbar spine and pelvis. With a working diagnosis of acute abdomen after a deceleration trauma computed tomography of the abdomen was performed (figures 1 and 2).

Figure 1. CT scan of the abdomen

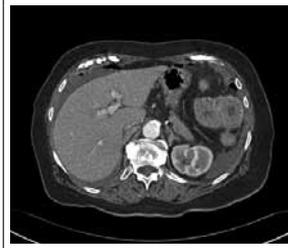
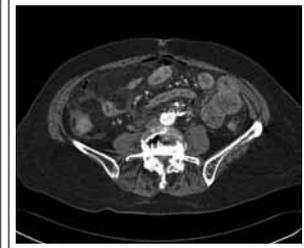


Figure 2. CT scan of the abdomen



WHAT IS YOUR DIAGNOSIS?

See page 94 for the answer to this photo quiz.

ANSWER TO PHOTO QUIZ (PAGE 93)

ACUTE ABDOMEN AFTER DECELERATION TRAUMA

On computed tomography accumulation of fluid and extraluminal air were seen. In the right lower quadrant obliteration of mesenteric fat was recognised. Because of our patients older age and history of constipation a perforated diverticulum was considered as a possible diagnosis. On laparotomy extensive adhesions were found in the lower abdomen, as well as a small incisional hernia after the previous hysterectomy with perforation of the ileum at the edge of the hernia. Segmental resection of the perforated part of the small bowel was performed followed by anastomosis. Postoperatively, antibiotic treatment was initiated. Unfortunately our patient died 11 days after laparotomy due to postoperative complications.

Traumatic bowel perforation can be caused by penetrating trauma, including accidental perforation during laparoscopy or endoscopy. Blunt abdominal trauma, occasionally related to seat belts in motor vehicle accidents, can lead to small bowel perforation as well. In patients with blunt abdominal trauma bowel injury occurs in 1%, leading to perforation in approximately 40% of these patients. The jejunum and ileum are involved most frequently.¹ In our patient perforation was related to a deceleration trauma. Probably her older age and impaired intestinal mobility due to herniation and adhesions made her vulnerable to small bowel perforation. Deceleration trauma has previously been described as a possible cause of small bowel perforation.²

Traumatic small bowel perforation is an uncommon injury and diagnosis can be laborious.³ Diagnostic delay has a marked effect on mortality.⁴ A multi-modal approach is mandatory for an accurate diagnosis: the reconstruction of the mechanism of injury, serial physical examination, laboratory data (especially white blood cells and amylase), diagnostic abdominal lavage and appropriately selected imaging modalities. Despite improvements in diagnostic workup traumatic bowel perforation still has a mortality of 10.6%.⁴

REFERENCES

1. Watts DD, Fakhry SM; EAST Multi-Institutional Hollow Viscus Injury Research Group. Incidence of hollow viscus injury in blunt trauma: an analysis from 275,557 trauma admissions from the East multi-institutional trial. *J Trauma*. 2003;54:289-94.
2. Vertruyen HM, Nardini J, Bruyns J. Isolated perforations of the small bowel from blunt abdominal trauma. Report of two cases and review of the literature. *Acta Chir Belg*. 1995;95:76-80.
3. Saku M, Yoshimitsu K, Murakami J, et al. Small bowel perforation resulting from blunt abdominal trauma: interval change of radiological characteristics. *Radiat Med*. 2006;24:358-64.
4. Fakhry SM, Brownstein M, Watts DD, Baker CC, Oller D. Relatively short diagnostic delays (<8 hours) produce morbidity and mortality in blunt small bowel injury: an analysis of time to operative intervention in 198 patients from a multicenter experience. *J Trauma*. 2000;48:408-14.