

Radiological findings in blunt abdominal trauma: bowel and mesenteric injuries

Abstract

Mesenteric and intestinal injuries resulting from blunt abdominal trauma are relatively uncommon, but can be life-threatening. In this case, we present the story of a 46-year-old man who experienced blunt abdominal trauma due to a traffic accident. We will examine the specific and non-specific radiological findings that should alert us to the possibility of mesenteric or intestinal injury in such cases.

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Marta Gallego Verdejo, Ana Peña Aisa, Reyes Petruzzella Lacave, Sara Carmen Parrado García

Hospital Clínico Universitario de Valladolid, Spain

Correspondence: Marta Gallego Verdejo, Hospital Clínico Universitario de Valladolid, Spain, Email martag.919@gmail.com

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Case report

We present the case of a 46-year-old male who was involved in a high-speed head-on road traffic accident. On anamnesis he was conscious (Glasgow 15) with back, chest, and abdominal pain. Physical examination revealed a hematoma in the right anterior thoracic region and the left hemiabdomen, with costal and sternal pain and acute abdomen with generalized defense.

As he was hemodynamically stable, a full body computed tomography (CT) was performed (figure), including the skull, cervical spine, thorax, abdomen, and pelvis. The abdomen showed abundant haemoperitoneum and loss of continuity of the cecum wall with faecaloid material exiting into the peritoneum, concerning traumatic perforation. A small perforation was also observed in the ileum, as well as a generalized thickening of the small bowel loops which, together with the haemoperitoneum, suggested underlying vascular damage. He also had bilateral rib fractures and underlying pulmonary contusion. Given these findings, emergency surgery was performed, which confirmed the existence of a tear in practically the entire ileal mesentery, with perforation of the cecum and several segments of the ileum. Finally, he presented a slow but favorable evolution and was discharged 13 days after the operation.¹⁻⁵

Discussion

The diagnosis of traumatic mesenteric and bowel injury can be a real challenge for the radiologist. It is estimated that up to 40% of cases go undetected in the initial computed tomography (CT) study, with the significance that, if present, they are an indication for urgent surgery, and a delay in diagnosis and treatment is associated with a significant increase in morbidity and mortality. This is probably due to its low incidence in cases of abdominal trauma (1-3%) and to the fact that the findings are frequently non-specific. In blunt abdominal trauma, the small intestine is most frequently affected, followed by the colon and duodenum. Similarly, the vascularisation of the small bowel (especially at the ileocaecal region) is also more frequently damaged.

Abdominal CT has high specificity but low sensitivity in detecting these lesions. Specific signs of intestinal injury include the presence of extraluminal air, either in the peritoneal cavity, between the folds of the mesentery, or in the retroperitoneal space; the extraluminal outflow of intestinal contents, the visualization of a parietal defect or the absence of enhancement of part of the circumference of a loop. Mesenteric trauma should be suspected if there is extravasation of

contrast around the vessels, generally associated with hematoma or haemoperitoneum. All these signs are specific to intestinal or mesenteric injury and are therefore indicative of urgent surgery. Other less specific signs that may be present are the existence of free fluid, parietal thickening of loops (secondary to a hematoma, contusion, or ischemia due to vascular injury), intramural hematoma (frequent in duodenal trauma), irregularity in the parietal enhancement or in the mesenteric vessels, trabeculation of the mesenteric fat or presence of hematomas (Figure 1).⁶⁻¹⁰

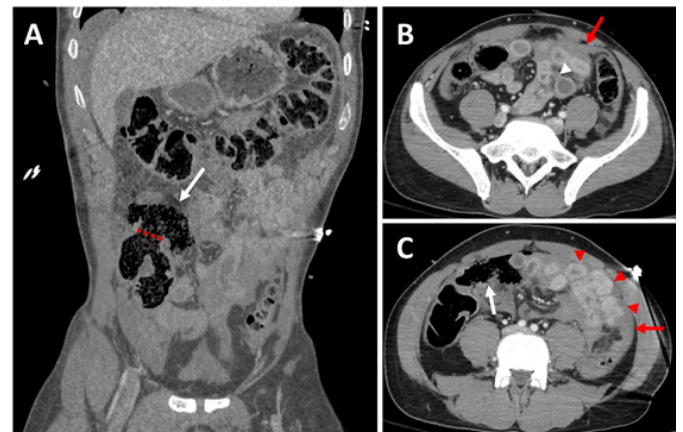


Figure 1 Intestinal and mesenteric injury after blunt abdominal trauma. **(A)** Contrast-enhanced abdominopelvic CT, coronal section showing a loss of continuity of the wall of the cecum (dotted line) with the outflow of intraluminal material into the peritoneal cavity (white arrow). **(B and C)** Same patient, axial sections show a solution of continuity of the wall of a loop of ileum (white arrowhead) and abundant haemoperitoneum (red arrow). Diffuse thickening of the small bowel loops (red arrowhead) secondary to the mesenteric vascular lesion is also visualized.

Conclusion

Traumatic bowel and mesentery injury can be a diagnostic challenge in the emergency setting, but the detection of this substantially changes the management of these patients. For this reason, knowledge of the main signs of bowel and vascular injury, as well as those that are less specific but may indicate underlying injury, is essential.

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None.

Conflicts of interest

The authors declare that there are no conflicts of interest.

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