CLINICAL IMAGE

Strangulated internal abdominal hernia caused by horse riding

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Internal abdominal hernia (IAH) is defined as a protrusion of the intestine or other organs through a natural opening or a defect within the peritoneal cavity.[1,2] The acquired defects are mainly the result of surgery such as gastrectomy or Roux-en-Y gastric bypass.[3] Internal abdominal hernia may lead to incarceration, strangulation, or necrosis.[2] The clinical symptoms are nonspecific and, therefore, IAH is sometimes difficult to diagnose. On imaging, IAH-related findings can also be difficult to interpret.[2] This difficulty leads to diagnostic delays followed by ischemia, gangrene, perforation, and peritonitis. If strangulation develops, the overall mortality rate exceeds 50%.[4] We present a case of a patient with IAH that occurred after horse riding.

A previously healthy 34-year-old man was admitted to the surgical ward because of acute abdominal pain, with a suspicion of intestinal obstruction. He presented with nausea, vomiting, sharp abdominal pain, and gas and stool retention that persisted for several hours. Two days earlier, the patient performed an intense physical activity, that is, horse riding, after which recurrent, intermittent abdominal pain occurred. On the following day, the patient visited the nearest emergency department (ED). He was examined by a paramedic and subsequently assigned the second level of priority. A muscle relaxant was administered and improvement was observed. The patient decided to leave the ED, as he felt better after spending time there. On the next day, the pain intensified and the patient visited the ED in our hospital. During the physical examination, the abdomen was distended and diffusely painful, with the most severe pain being located in the right iliac fossa. Rebound tenderness and guarding were noted as well. Auscultation revealed the absence of bowel sounds. The only significant information from the patient's history was the fact that he underwent appendectomy 20 years ago. A vertical abdominal X-ray image showed dilated (3.4-cm wide) small bowel loops with gas-fluid levels (FIGURE 1A). Computed tomography confirmed the suspicion of intestinal obstruction (FIGURE 1B). The findings indicated bowel infarction due to internal hernia and

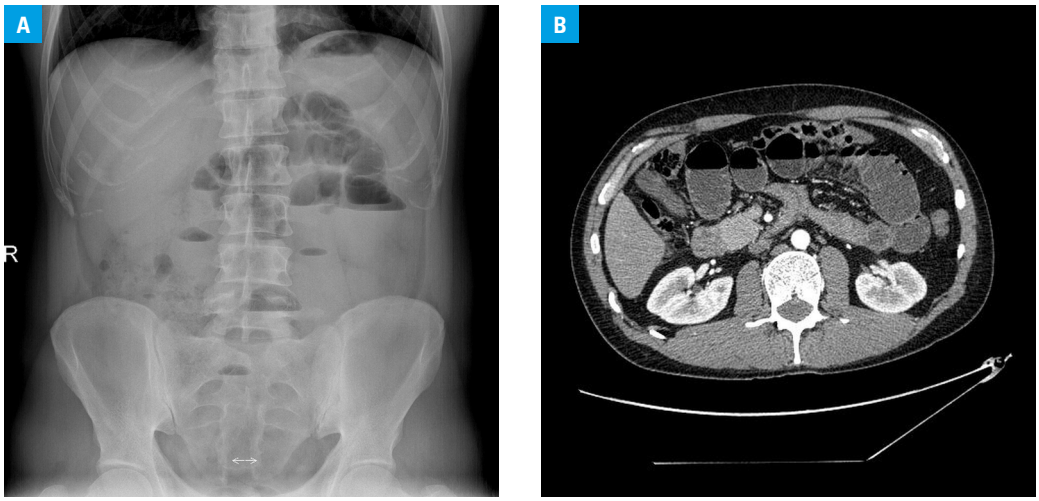

FIGURE 1 A – standard posteroanterior vertical abdominal X-ray showing gas-fluid levels in the small bowel loops in the epigastrium; B – computed tomography visualizing gas-fluid levels in the herniated loops in the epigastrium

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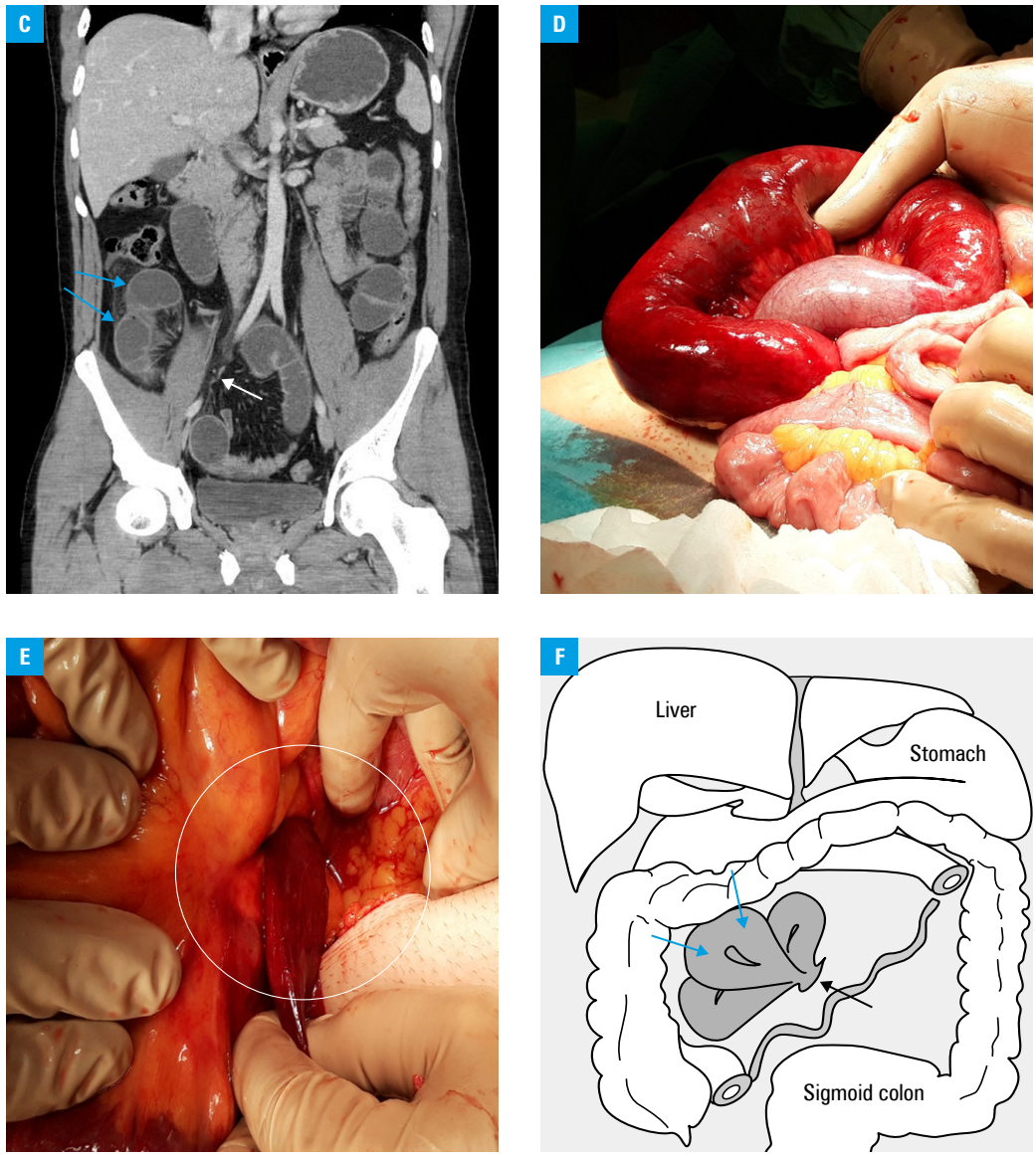

FIGURE 1
C – computed tomography demonstrating incarcerated small bowel loops (blue arrows) and the hernia gate (white arrow);
D – intraoperative view of the necrotic incarcerated small bowel loop, which was subsequently resected;
E – intraoperative view of the hernia gate located in the small-bowel mesentery (circle);
F – intra-abdominal cavity topography showing incarcerated small bowel loops (blue arrows), the hernia gate (black arrow), and abdominal organs

a possible cause was revealed (FIGURE 1C). Laboratory tests were performed and yielded the following abnormal results: white blood cell count, $23 \times 10^3/\mu l$ (reference range, $4–10 \times 10^3/\mu l$) and C-reactive protein level, 6.99 mg/l (reference range <5 mg/l). Other results were unremarkable. Due to acute abdominal symptoms, the patient was referred for immediate surgery. Due to insufficient intestine decompression by the inserted nasogastric tube, which was necessary for safe anastomosis as well as reliable reconstruction during laparoscopy, laparotomy was performed. The emergency surgery revealed small bowel volvulus located on the visceral adhesion in the right iliac fossa, which resulted in the presence of a 15-cm segment of ischemic bowel (FIGURE 1D–1F). Partial resection of the ileum that included the lesion was performed. Linear staplers were used for side-to-side anastomosis. The patient was discharged on day 7.

Internal abdominal hernia should be considered in the differential diagnosis of ileus in young adults with an unremarkable history or nonspecific trauma. Emergency explorative laparotomy is mandatory to avoid the high risk of death.

ARTICLE INFORMATION

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CONFLICT OF INTEREST None declared.

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