Learning from errors

Concomitant intestinal obstruction: a misleading diagnostic pitfall

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Summary

A 78-year-old man presented to the casualty department, complaining of recurrent and worsening constipation for the previous 2 months. This was associated with central, colicky abdominal pain and melena. In the last days, the symptoms worsened and the patient became partially obstructed, with nausea, vomiting and passing flatus but not stools for 72 h. The past medical history was unremarkable. The radiological findings of the plain abdominal film were consistent with mechanical small-bowel obstruction. CT scan revealed an intraluminal mass in the small bowel, which drew attention away from gross thickening of the caecal wall that was also present. A careful review of the images should not be omitted. One must be aware of a polymorphous appearance and the multiple causes of intestinal obstruction and avoid underestimating even the minor and less evident radiological findings.

BACKGROUND

Abdominal pain is one of the most frequent complaints of patients presenting to the emergency department.

Abdominal pain is often the first symptom of bowel obstruction and may be associated with a varying degree of bowel distension.

The diagnostic approach to a patient with abdominal pain and/or bowel obstruction should include an erect chest x-ray, a plain abdominal film and a US scan when indicated.¹ Further assessment usually includes a CT scan, possibly with double (intravenous and oral) or triple contrast (enema) to assess the degree and level of the obstruction and to identify the possible cause.

Intussusception might constitute a diagnostic pitfall, because it rarely occurs in adults (5% of all intussusceptions).² Instead, intestinal intussusception in children is a well described and frequently reported entity.³

Many factors may result in suboptimal performance of abdominal CT or inaccurate interpretation of the images. Improper technique, observers' errors and lack of clinical information are major contributors to misdiagnoses.⁴

CASE PRESENTATION

A 78-year-old man presented to the casualty department complaining of recurrent and worsening constipation for the previous 2 months. This was associated with central, colicky abdominal pain and melena. In the last days, the symptoms worsened and the patient became partially obstructed, with nausea, vomiting and passing flatus but not stools for 72 h. His past medical history included hypertension and benign prostatic hypertrophy but no previous surgical procedures. On physical examination the abdomen was slightly distended, with mild tenderness in the middle

quadrants and right flank. Digital rectal examination revealed normal stools.

INVESTIGATIONS

The laboratory results showed a white-blood-cell count within the normal range and a mild anaemia (Hb 10.2 g/dl). The plain abdominal x-ray showed dilated small-bowel loops, with air-fluid levels (figure 1). Abdominal CT scan was ordered, and the findings are shown in figure 1. On abdominal CT scan, the radiologist identified multiple air-fluid levels with dilated jejunal and ileal loops; his attention was drawn to the right iliac fossa, to thickened bowel loops with fatty tissue within, consistent with intussusception (figure 2, right red arrow). Large bowel was described as collapsed.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis based on the CT findings in this case may include a stricture in terminal ileitis from Crohn's disease; a small-bowel foreign body (Phytobezoar, trichobezoar, etc.); other causes of small bowel obstruction, such as malignant ileal masses, inflammatory pseudotumour or adhesions; and the actual diagnosis of concomitant ileal lipoma, intussusception and caecal colon cancer.

False-positive and false-negative cases may affect the accuracy of CT scan interpretation. Due to inadequate oral administration of contrast material, normal structures (eg, bowel) may remain unopacified and simulate tumours. Repeat scanning with additional contrast material and sodium bicarbonate, at selected levels, and perhaps with changes in patient position, often reveals the true nature of pseudotumours in the gastrointestinal tract. To achieve accurate CT images of the small-bowel loops, adequate oral

Figure 1 Initial plain abdominal film and the CT scan of the abdomen camouflaging the diagnostic pitfall.

Figure 2 CT abdomen with red arrows showing intussuscepted small bowel with intraluminal lipoma (lower right red arrow) and the adjacent caecal mass (upper red arrow adjacent to the midline).

contrast material must be administered, with sufficient time before the examination. Repeat scanning at selected levels is often helpful in determining the true nature of findings, as the appearance of bowel will often change due to peristalsis. In examining the large bowel, a careful review of the preliminary scout image or repeat scanning performed with additional contrast (barium or the safer option of water-soluble contrast in case of acute obstruction or when a bowel perforation could be suspected) administered rectally is often helpful in avoiding misdiagnosis.⁴

TREATMENT

During laparotomy, ileoileal intussusception was found 60 cm proximal to the ileocaecal valve; after loosening and

unfolding the intussuscepted bowel, an intraluminal mass consistent with ileal lipoma could be clearly felt and identified (figure 3, see also movie). The bowel loops distal to the intussusception were also dilated, however (figure 4, intra-operative picture and movie). Manual palpation of the cecum revealed a solid, firm mass of the caecal wall, stenosing the ileocaecal valve. Ileal resection of a 20 cm long segment, including the intussuscepted segment and right colectomy, was performed, followed by double, ileo-ileal and ileo-colic, anastomosis. The pathology revealed a sub-mucosal lipoma, causing the ileal intussusception, together with a 4 cm moderately differentiated colonic adenocarcinoma. This was ulcerated, exophytic, obstructing the ileo-caecal valve and involving the entire colonic wall, with

Figure 3 Intra-operative picture showing the procedure of loosening and unfolding the intussusception. The presence of an intraluminal mass clearly appears.

Figure 4 Picture including a further lower CT scan slide clearly showing a more visible gross thickening of the caecal wall (left red arrow) consistent with colon cancer. Also shown is the intussuscepted small bowel with intraluminal lipoma (right red arrows), the intraoperative finding of intussusception and surprisingly dilated bowel loops distally to the intussuscepted site, and the pathology specimen of the submucosal small-bowel lipoma and adenocarcinoma of the cecum.

extension to the pericolic adipose tissue and nodal metastatic spreading (figure 4, pathology slides).

On reviewing the CT slides, an initially misdiagnosed thickening of the caecal wall, close to the intussuscepted bowel, was noted (figures 2 and 4, CT scan: see left red arrow).

OUTCOME AND FOLLOW-UP

The postoperative course was uneventful, and the patient was discharged on the 9th postoperative day. He received adjuvant chemotherapy (oral capecitabine). After 1-year follow-up, he is alive with no evidence of disease.

DISCUSSION

Intussusceptions of the small bowel are usually caused by benign neoplasms^{5 6} (lipoma, leiomyoma, haemangioma, neurofibroma), adhesions, Meckel's diverticulum, lymphoid hyperplasia, trauma, coeliac disease, intestinal duplication or Hirsch-Schönlein purpura. Malignant lesions causing intussusception of the small intestine account for about 15% of the cases² and are more often metastatic (frequently melanoma⁷). Idiopathic intussusception occurs in about 20% of all small-bowel intussusceptions.

In adults, it is important to differentiate between small bowel and colonic intussusception; in fact, in 63% of cases of small-bowel intussusceptions, a benign underlying lesion can be found, whereas in 58% of cases of large-bowel intussusceptions, a malignant aetiology has to be expected.⁵

A lipoma of the gastrointestinal system, found post mortem in 0.2%, is a benign tumour composed of mature lipocytes.⁸ Only 20–25% are found in the small bowel.⁹

CT-scan diagnosis of intussusception is usually characteristic: a soft tissue mass containing outer intussusceptions and an inner intussusceptum.¹⁰ The lipoma appears on CT scan as a round, homogeneous mass with fat attenuation values, within the lumen of the intussusceptions. When a malignant lesion is suspected, CT scan might also be useful for staging. It can identify bowel dilatation, free fluid, metastases or lymphadenopathy.^{11 12}

In middle-aged patients presenting with recurrent abdominal symptoms, unusual causes of intestinal obstruction should be considered, but a careful and thorough evaluation of the CT scan findings should warrant to avoid missed lesions. Finally, during surgery for bowel obstruction, if the bowel distal to the lesion is not collapsed and it does not distend up, then the area treated may not be the true point of obstruction.

Learning points

- ▶ In middle-aged patients presenting with recurrent abdominal symptoms, unusual causes of intestinal obstruction should be considered.
- ▶ If the plain abdominal x-ray shows air-fluid levels and grossly distended bowel loops, the level and possible site of obstruction must be assessed (ie, small bowel or large bowel). A CT scan with double or triple contrast should be part of the diagnostic workup if water-soluble contrast follow-through or a contrast enema are not feasible or are inconclusive.
- ▶ A careful and thorough evaluation of the CT scan by the radiologist should take place to ensure lesions are not missed.
- ▶ The most radiologically evident or outstanding finding should not sidetrack the radiological diagnosis.
- ▶ The surgeon should not neglect to perform a careful and thorough intraoperative exploration and palpation of the gut, from the upper to the lower parts, even when a lesion is found that can explain the obstruction present. The finding of distended bowel distally to the lesion suspected of being the cause of the obstruction should suggest the possible presence of a further concomitant, obstructing, lesion in the distal bowel.

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