LETTER / Gastrointestinal imaging

Ileal diverticulitis complicated by portal-mesenteric pylephlebitis and pulmonary septic foci

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Ileal diverticulitis is a rare cause of acute abdomen and pain in the right iliac fossa. Like any infectious or inflammatory abdominal focus, it can be complicated by septic thrombosis of the portal vein [1,2]. The particular feature of our observation is the association of the portal-mesenteric pylephlebitis secondary to the diverticulitis with septic pulmonary foci which influenced therapeutic management.

Observation

This 70-year-old woman was hospitalised in intensive care for severe sepsis. For the last 6 days she had presented epigastralgia with vomiting and diarrhoea and a fever of 39 °C. The patient was polyneic (25/min). Laboratory tests showed an inflammatory syndrome with CRP of 500 mg/L, leukopenia of 4100/mm³, thrombocytopenia of 34,000/mm³ with marked cholestasis and cytolysis. Several blood cultures were positive for Escherichia coli and Clostridium ramosum. A chest/abdomen/pelvis CT scan was performed and showed localised densification of the mesenteric fat next to thick-walled diverticulae, on the mesenteric side of the terminal ileum (Fig. 1a). The appendix was normal, without densification of surrounding fat. The caecum was normal (Fig. 1a). Hypodense material was present in the ileo-caeco-appendicular venous trunk (Fig. 1b), the superior mesenteric vein and the right portal branch (Fig. 2) related to a thrombosis. The thoracic images (Fig. 3a and b) showed sub-pleural nodular condensation in the right inferior lobe, which was excavated and had a necrotic centre, indicating a septic focus.
Figure 1. Abdominal CT scan. Acquisition after intravenous injection of iodinated contrast agent, coronal oblique reconstruction. Thick-walled diverticula (arrow) of the last ileal loop with densification of the surrounding fat (short arrows). Thrombosis of the ileo-caecal appendicular venous trunk (head of arrow). The appendix and caecum look normal (a). Endoluminal hypodense material in the superior mesenteric vein due to blood clot (b).

Figure 2. Abdominal CT scan after intravenous injection of contrast agent. Transverse section: right portal thrombosis.

The patient was given effective antibiotic and anticoagulation treatment. Since the sepsis persisted and new pulmonary foci appeared, she underwent surgery; exploration revealed the presence of a perforated diverticulum of the last ileal loop with a mesenteric abscess. Ileal resection was performed with a terminal-lateral ileocolic anastomosis. A CT scan at 3 months showed regression of the lesions with persistence of the right portal branch thrombosis.

Discussion

Diverticula of the small intestine are rare, with a frequency of less than 1% in autopsy series [1,2]. They are four times more frequent in the duodenum than in the jejunum and are even rarer in the ileum [1,2]. They are two to three times more common in elderly men (in their seventies) than in women and are often associated with colonic diverticulosis (35 to 75% of cases) [3,4]. Acute complications such as diverticulitis, perforation, obstruction and haemorrhage are relatively rare, being seen in 5 to 10% of cases with mortality as high as 50% due to delayed surgical management [1,2]. The most common complication is diverticulitis. It appears clinically as acute abdominal pain, hyperleukocytosis and fever [2]. These signs are non-specific, hence the diagnostic usefulness of imaging [2–4].

The diagnosis of ileal diverticulitis in our patient was due to the localised densification of the mesentery next to the perforated diverticulum. A CT scan at 3 months showed regression of the lesions with persistence of the right portal branch thrombosis.

Figure 3. Thoracic CT scan after injection of iodinated contrast agent. Mediastinal (a) and parenchymal (b) window axial scans show an excavated sub-pleural lesion with a hypodense centre of the apical segment of the right inferior lobe.
to thick-walled ileal diverticula. The appendix and caecum were normal which eliminated a diagnosis of appendicitis, appendicular diverticulitis or lesion of the caecum.

CT is the reference imaging procedure because it can objectivise thickening of the ileal wall, mesenteric inflammation, the presence of extradigestive air and abdominal collection [1—4]. Above all, the affected diverticulum on the mesenteric side of the ileum can be seen directly, so that it can be distinguished from a Meckel’s diverticulum. The latter is a vestigial embryonic remnant due to incomplete involution of the omphalomesenteric canal, vascularised by the vitelline artery or by several branches from the superior mesenteric artery. It is in the form of a diverticulum located on the antimesenteric side between 60 and 80 cm from the ileocaecal valve. The end of the diverticulum is often free or attached to the umbilicus by a fibrous band. This congenital diverticulum may also be complicated by diverticulitis [5,6]. Differential diagnosis can also be made between appendicitis, caecal diverticulitis, appendicular diverticulitis and terminal ileitis of inflammatory or infectious origin [7]. The presence of inflammation around terminal ileal diverticula with an appendix and caecum with no thickened walls and no marked densification of the surrounding fat should orientate the diagnosis [1,3].

The ileal diverticulitis was complicated by septic portal thrombosis or pylephlebitis which can complicate any septic or inflammatory abdominal focus and which is secondary to microorganisms passing through the inflamed or perforated digestive wall into the lumen of veins. Contact with the endothelium causes septic mesenteric then portal thrombosis due to inflammatory phenomena. The microorganisms most commonly involved are: *E. coli, Proteus mirabilis* and *Bacteroides fragilis*. The most common causes of portal pylephlebitis are appendicitis and sigmoid diverticulitis. Diagnosis is made using Doppler and CT scans. Therapy is based on antibiotics, anticoagulants and treatment of the original infectious focus [8].

Septic pulmonary emboli are generally the consequence of infection of the tricuspid valve or systemic venous disease [9]. We have not found any observation of septic pulmonary emboli in the case of portal pylephlebitis. It is also possible that pulmonary contamination occurred via the retroperitoneal systemic venous circulation.

Treatment with antibiotics gives good results above all where there is early diagnosis. Surgery is indicated essentially in complicated recurring forms [10].

### Conclusion

Ileal diverticulitis is a rare cause of acute abdomen and of an infectious abdominal focus. It can be complicated by pylephlebitis and septic metastases. CT is the diagnostic method of choice.

### Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

### References


