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Portal Pneumatosis Secondary to Acute Appendicitis

Neumatosis portal secundaria a apendicitis aguda

Portal vein pneumatosis is a radiological finding that is classically associated with intestinal necrosis and ischemia, but it has also been described associated with other abdominal pathologies.¹⁻⁴ What is interesting about the case that we report is the unusual presence of this entity in a commonly treated disease in the emergency surgery department.

The patient is a 59-year-old male who came to our Emergency Room due to symptoms of dyspnea, oliguria, abdominal distension and fever that had been developing over the previous 3 days without other accompanying symptoms. The patient's medical history included arterial hypertension, obesity, surgery for cerebral astrocytoma 35 years earlier and ventriculoatrial shunt placement. Upon arrival, the patient presented tachypnea, hypoxemia and a trend toward hemodynamic instability that improved with serum therapy. Abdominal exploration showed a soft, depressible abdomen that was slightly distended, with diffuse pain but no clear signs of peritoneal irritation and with reduced peristalsis. The blood tests showed renal failure and dehydration (creatinine 5.3 mg/dL, hemoglobin 16.4 g/L) and parameters of sepsis (presence of 31% bands and PCR 50.2 mg/dL). After the hemodynamic stabilization of the patient, an abdominal CT showed an important portal vein pneumatosis in the left hepatic lobe (Fig. 1) and portal vein (Fig. 2), with several gas bubbles in the anterior mesenteric fat in a probable extraluminal location, an increase in the caliber of the vermiform appendix with poorly-defined edges and trabeculation of the adjacent fat. All this was compatible with acute appendicitis, and we therefore decided emergency surgery.

At surgery, we observed diffuse purulent peritonitis secondary to acute appendicitis with perforation at the base of the cecum. Appendectomy was performed with thorough abdominal cavity lavage. During the intervention, the patient presented hemodynamic instability requiring support with vasoactive drugs, tachycardia with ventricular extrasystoles (which reverted after the administration of amiodarone), severe hypoxemia and oliguria. Post-operative complications included hypoxemia requiring prolonged intubation, consumption

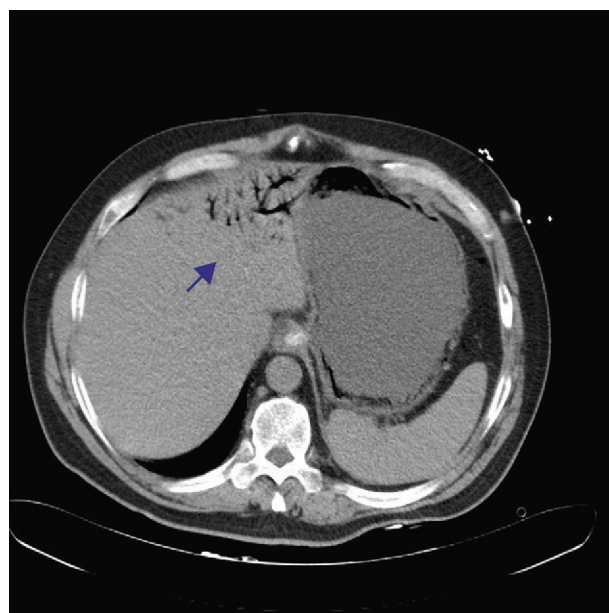


Fig. 1 – Presence of portal vein pneumatosis in the left hepatic lobe.

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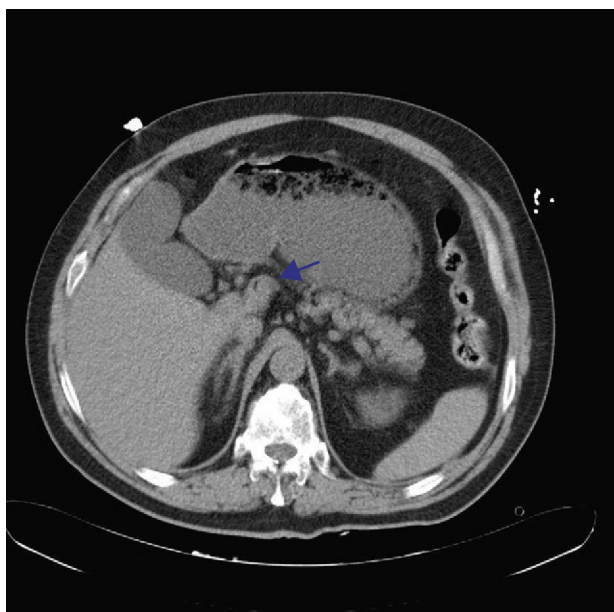


Fig. 2 – Presence of air in the portal vein.

coagulopathy requiring the administration of blood derivatives, leukopenia with thrombocytopenia, catheter-related bacteremia due to multidrug-resistant *Acinetobacter baumannii* (*A. baumannii*) and left pleural effusion. The patient was able to initiate oral feeding on the 13th day post-op. After 17 days in the ICU, the patient was discharged from the hospital on the 25th day after surgery.

Portal vein pneumatosis is a radiological finding that is usually associated with ischemia and intestinal necrosis, although it has also been described in association with a wide variety of abdominal pathologies.¹⁻⁴ The physiopathology of this entity is based on the entrance of gas from the intestinal lumen due to high gas pressure or alterations in the mucosa. In the case of intra-abdominal abscesses, however, it has been proposed that gas-forming bacteria enter the portal venous circulation.³ The diagnosis of portal pneumatosis is made by means of imaging studies. Simple abdominal X-rays are only useful to detect large quantities of portal vein gas and it is much less sensitive than ultrasound or abdominal CT.⁴ Ultrasound usually shows small hyperechoic images with centrifugal distribution and movement up to 2 cm from the hepatic margin, and it is important for the differential diagnosis to include the presence of air in the biliary tree.⁵ Abdominal CT is usually able to make an etiological diagnosis and reveals the presence of gas in the portal and mesenteric veins.⁶⁻⁸ Treatment of portal pneumatosis mainly entails treatment of its causal pathology because its diagnosis does not necessarily indicate surgery. The prognosis depends more on the severity and therapeutic possibilities of the causal

process than on the presence of gas in the portal system.^{3,4} Currently, patients affected with portal vein pneumatosis present survival rates close to 60%, although the rate may be lower than 25% in cases associated with mesenteric ischemia.^{2-4,9,10}

The interest of this case report lies in the fact that acute appendicitis is an entity that is rarely associated with the presence of gas in the mesenteric-portal vein.¹¹⁻¹³ Nonetheless, it is probable that this association is justified by the atypical presentation and the late diagnosis of the primary pathology, which would mean that the finding of portal vein gas in acute appendicitis should not be considered a factor for poor prognosis *per se* but instead as a sign of the evolution of the causal process.

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Acute Amoebic Appendicitis

Appendicitis aguda amebiásica

Acute appendicitis (AA) is the most frequent cause of emergency abdominal surgery in our setting, representing around 60% of all acute abdominal diseases requiring surgery.¹ In western countries, a very uncommon cause of AA is amebic infection, although its incidence is growing due to immigration.

We present the case of a 38-year-old male patient who had emigrated from Burkina Faso and had been living in our country for 9 years. He came to our emergency department complaining of abdominal symptoms that had developed over the previous 24 h; they had initiated in the umbilical region and had been located in recent hours in the right iliac fossa (RIF). The patient presented with a fever of 38.4 °C, with no diarrhea or any other symptoms. On physical examination, there was pain upon palpation of the RIF with abdominal guarding and signs of peritoneal irritation. Emergency blood tests showed hemoglobin 14 mg/dl, 17 460 leukocytes (85% neutrophils) and 94% prothrombin activity. Abdominal ultrasound revealed findings compatible with retrocecal AA. Emergency surgery was performed laparoscopically, and purulent AA was found with purulent peritonitis in the RIF. A laparoscopic appendectomy was performed. The patient had a favorable postoperative and was discharged on the 2nd day post-op.

The pathology study reported a cecal appendix with intense acute inflammatory infiltrates and areas of gangrene and periappendicitis. At a greater magnification, numerous *Entamoeba histolytica* trophozoites were observed, interspersed with fibrin-inflammatory material in the appendix lumen (hematoxylin-eosin stain, Fig. 1). Subsequently, specific staining was done with the PAS (periodic acid-Schiff) technique, demonstrating the presence of *Entamoeba histolytica* trophozoites in the inflammatory tissue substituting the appendicular mucosa (Fig. 2). When the diagnosis of amebic AA was made, antiparasitic treatment was initiated with metronidazole.

Parasitic appendicitis is a very rare entity in western countries. There are few published reports about this pathology in the literature, and are limited to communications of clinical cases that have appeared due to growing immigration in our society. Other reviews from under-developed countries describe a frequency of parasitic appendicitis between 2.3% and 3.9% of the total number of surgically treated AA.^{2,3} Precarious living conditions, poor hygiene and the ingestion of parasites as cysts that later transform into trophozoites are the most important predisposing causes in these countries.

The presence of these trophozoites produces edema of the appendix mucosa, with obstruction of the lumen and later appendix infection.⁴ The clinical symptoms of amebic appendicitis does not normally differ from the usual AA symptoms (pain in RIF with local peritonism and fever), although it may be associated with dysentery, which is

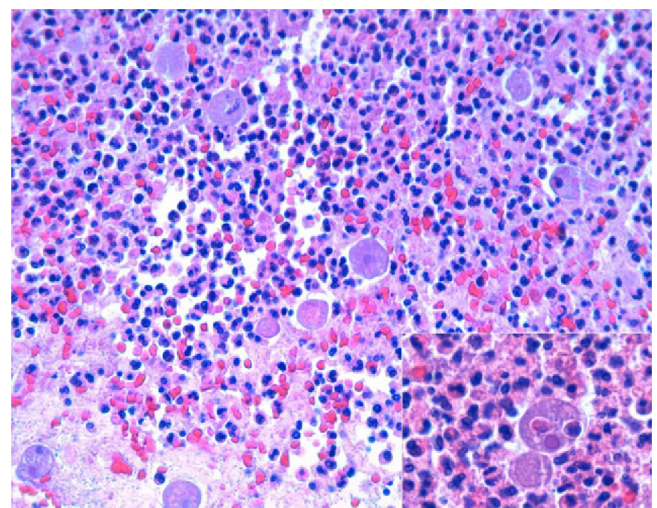


Fig. 1 – Presence of numerous trophozoites presenting a “foamy”-looking cytoplasm and central karyosome in the appendix lumen.

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