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Ileitis as the exclusive manifestation of COVID-19. The first reported case☆

Ileítis como manifestación exclusiva de COVID-19. El primer caso reportado

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection generally presents with respiratory symptoms. However, in a recent meta-analysis of 35 studies, Mao et al. reported that 10–21% of patients with respiratory Coronavirus disease 2019 (COVID-19) had gastrointestinal manifestations. The most frequent gastrointestinal symptomatology was diarrhea (9%) and SARS-CoV-2 RNA was detected in stool in 54% of cases.[1] In the reported studies radiologic and endoscopic examinations, when performed, were normal.

By contrast, other studies had found endoscopic and radiological changes. Thus, Carvalho et al. reported a patient admitted for hemorrhagic colitis attributed to COVID-19 due to a negative etiologic study and the development of respiratory symptoms, being diagnosed of SARS-CoV-2 by nasopharyngeal swab.[2] Tullie et al. reported eight cases of isolated ileal involvement detected by abdominal ultrasound or CT scan attributed to COVID-19 in children diagnosed by a positive nasopharyngeal swab test, in these patients, neither ileal biopsies nor stool detection was not performed.[3] No similar cases have been reported in adults.

We present the case of a 47-year-old female worker of an elderly nursing home with no previous significant medical history was admitted to the emergency room. She reported 10 days of right lower quadrant abdominal pain, high fever (maximum 39.5 °C) and non-bloody diarrhea. The patient did not report any respiratory symptoms. No other family members were affected. Two nasopharyngeal and oropharyngeal swab specimens performed before admission had been negative for SARS-CoV-2. Respiratory auscultation was strictly normal, and pain was noted on the palpation of the right lower abdominal quadrant. Blood test showed markedly increased inflammatory parameters (leukocytes, D-Dimer, ferritin C-reactive protein). Chest X-ray was normal (Fig. 1a). Abdominal CT scan showed inflammatory signs in the distal ileum (Fig. 1b). The pulmonary images of the abdominal CT scan were normal (Fig. 1c).

Empiric treatment with ceftriaxone, metronidazole and azithromycin was started. The patient was admitted to the gastroenterology unit after a confirmatory negative SARS-CoV-2 NAAT (nucleic acid amplification test) (GeneFinder™ COVID-19 Plus Real*Amp* Kit, Osang Healthcare Korea) by amplification of RdRp, E and N genes in a nasopharyngeal swab.

The study was completed with an enzyme immunoassay which revealed negative *Yersinia* spp and *Campylobacter* spp antibodies. A rectal swab was performed and NAAT was positive for SARS-CoV-2. A fourth nasopharyngeal swab resulted negative.

Ileocolonoscopy was performed eleven days after because of the pandemic situation and the recommendation by our infectiology department of avoid the colonic preparation to prevent the possible risk of fecal SARS-CoV-2 elimination and the contagious to the medical team (currently this fact is not proved). No mucosal changes were found in the ileocolonic mucosa (Fig. 1d). Biopsies were taken and histology study showed no significant changes (Fig. 1e). NAAT of SARS-CoV-2, intestinal bacteria, viruses and parasites (Gastrointestinal panel Filmarray®, Biomerieux France) were performed being positive for SARS-CoV-2 and negative for *Salmonella* spp., *Shigella* spp., *Yersinia enterocolitica*, *Aeromonas* spp., *Vibrio* spp., *Plesiomonas shigelloides*, *Clostridioides difficile*, *Campylobacter* spp., *Cryptosporidium* spp., *Entamoeba histolytica*, *Giardia intestinalis*, *Cyclospora cayetanensis*, norovirus, astrovirus, sapovirus, adenovirus and rotavirus. At that time, serology was performed and both SARS-CoV-2 IgM + IgA and IgG antibodies were positive (Vircell SL®, Spain).

The patient recovered completely, with normalization of the previous blood test abnormalities. A SARS-CoV-2 control NAAT in rectal swab was negative before discharge from hospital. The patient remains asymptomatic after three-month follow-up.

To our knowledge, our report is the first well-documented case of SARS-CoV-2 intestinal infection without evidence of pulmonary involvement. The multiple negative nasopharyngeal swabs plus the normal chest X-ray and CT findings rule out pulmonary infection. Intestinal involvement was suspiced by the finding of an ileitis in the CT scan. Ileal mucosa was normal, showing a mismatch between radiology and endoscopy. However SARS-CoV-2 confirmed by two independent rectal and intestinal NAAT. The diagnosis of ileitis due to SARS-CoV-2 was made by the exclusion of other potential causes. In this context, it seems probable that the patient became infected by fecal-oral transmission.

No other studies detected the SARS-COV-2 in intestinal samples. However, during the SARS-CoV-1 epidemic in

☆ The patient has given his informed consent to publish the information included in the article.

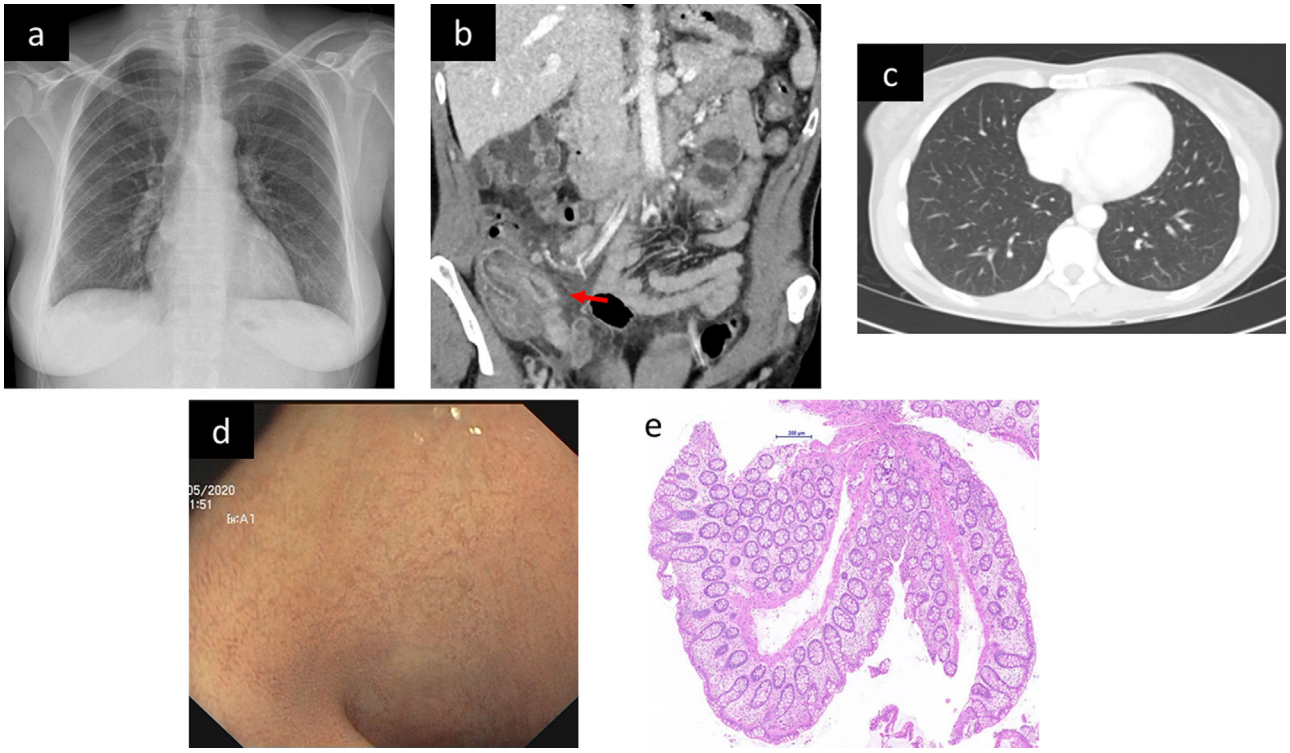

Figure 1 (a) Normal chest X-ray. (b) Inflammatory ileocecitis (red arrow) in an abdominal CT scan. (c) Normal pulmonary base images of the abdominal CT scan. (d) Ileocolonoscopy with normal mucosa. (e) Histology with no mucosal changes.

2003 studies in patients with gastrointestinal manifestations detected the virus in intestinal cells by molecular methods.[4] In our case, no immunohistochemical or FISH study was performed because commercial tests were not yet available.

We report a patient with SARS-CoV-2 infection apparently limited to the bowel. However, no recommendations or conclusions can be drawn from this case report. The patient had an important delay between the admission and the colonoscopy and, despite we found a radiological ileitis, endoscopic mucosa was normal.

In conclusion, SARS-CoV-2 may occur with an exclusive intestinal symptoms. Is important for clinicians to know and recognize this clinical presentation, a rectal swab may be necessary to establish the diagnosis.

Authors' contribution

Eduard Brunet and Albert Villoria managed the patient during hospitalization and wrote the manuscript. Antonio Casabella and Sonia Calzado critically reviewed the text and provided important intellectual content. All authors definitively approved the submitted version.

Conflict of interest

Albert Villoria has served as a speaker and consultant from MSD, Abbvie, Jansen and Falk. Eduard Brunet, Antonio Casabella, and Sonia Calzado, have not conflicts of interest.

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Perforated jejunal diverticulitis: A rare cause of acute abdomen☆

Diverticulitis yeyunal perforada: una causa rara de abdomen agudo

Jejunal diverticulitis is a very uncommon acquired pathology, with an incidence of 0.3%–1%.[1] The diverticula are located on the mesenteric face of the proximal jejunum in 75% of cases, the distal jejunum in 20% and the ileum in 5%.[1]

We present a case of perforated jejunal diverticulitis as a rare cause of acute abdominal pain and highlight the importance in this condition of having high clinical suspicion in order to diagnose and treat it early.

A 66-year-old woman who attended the Emergency Department due to colic-type abdominal pain in the epigastric region of four days' evolution, with associated nausea and vomiting. She presented a fever of 38 °C, and in the physical examination the abdomen was soft and depressible, with diffuse pain to palpation. Blumberg's sign was positive. The analysis revealed leukocytosis (15.9 × 10^9/l) and elevated C-reactive protein (CRP) (3.3 mg/dl). Abdominal and pelvic computed tomography (CT) was performed, finding pneumoperitoneum, intra-pelvic free fluid and increased mesenteric fat density in the left hemiabdomen. Diverticulosis was also found in the sigmoid colon. The patient's initial diagnosis was perforated sigmoid diverticulitis, and the decision was made to perform emergency surgical treatment. Intraoperatively, disseminated peritonitis was observed in all quadrants with inter-loop collections and multiple jejunal diverticula (10 diverticula distributed in the jejunum, beginning immediately distal to the duodenojejunal flexure) with a large perforation of one diverticulum on the mesenteric face of the jejunum at 80 cm from the duodenojejunal flexure (Fig. 1). The jejunal fragment with the perforated diverticulum was resected and termino-terminal (T-T) mechanical anastomosis carried out. The postoperative period was without incident and the patient was discharged on day seven after the procedure. On reviewing the CT following the surgery, it was possible to identify the diverticula (Fig. 1B). Subsequently, the anatomopathological study confirmed jejunal diverticular disease with perforation, as well as marked inflammation of the intestinal mesentery.

Jejunoileal diverticulosis was first described by Sömmering in 1794 as a herniation of the mucosa and submucosa on the mesenteric face of the wall of the small intestine, through the muscular layer (pseudodiverticulum).[2] Its aetiology is unknown and it is believed to be caused by a combination of abnormal peristalsis, intestinal dyskinesia and an increase in pressure.[3] These diverticula generally occur in conjunction with other diverticula that coexist in other locations, such as the colon in up to 75% of cases,[3] as occurred in our patient.

Jejunal diverticulosis is often asymptomatic; just 29% of patients develop nonspecific symptoms such as chronic postprandial abdominal discomfort, flatulence, diarrhoea, malabsorption or steatorrhoea, which can easily lead to an erroneous diagnosis and necessitates a high degree of clinical suspicion.[1,3] Some 10% develop complications such as bowel obstruction, peritonitis, lower gastrointestinal haemorrhage or perforation, the latter being a serious complication that occurs in 2%–6% of cases.[3]

Diagnosis is often challenging, as although computed tomography is the best imaging method to diagnose complicated jejunal diverticulosis, on up to 75% of occasions imaging tests are not initially diagnostic and the diagnosis is obtained intraoperatively,[3] as occurred in our patient.

The majority of complications of jejunal diverticulosis require surgical treatment. Although conservative management of a perforated jejunal diverticulum can be carried out in stable patients who present localised abdominal signs and symptoms,[4] surgical exploration with segmental resection and primary anastomosis is the cornerstone of treatment.[5] Alternative surgical procedures such as primary closure, diverticulectomy or invagination are associated with extremely poor results and high mortality rates, and so should be avoided.[5]

Due to poor prognostic factors, such as advanced age and delays in diagnosis and treatment, mortality due to jejunal diverticulitis varies from 0% to 5%, increasing to 40% in the event of perforation.[1,5]

In conclusion, given the low incidence of jejunal diverticula, their nonspecific clinical picture and the low sensitivity of imaging tests, they are often an incidental finding during surgery and confused with other pathologies, as in our case, which may delay the treatment of this condition.

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