

INTESTINAL PNEUMATOSIS IN A PATIENT WITH COVID-19 INFECTION EVOLVING WITH COMPLICATIONS AND INDICATION FOR AN EMERGENCY SURGICAL APPROACH - CASE REPORT

Bernardo Gomes José de Brito

Faculdade de Medicina de Petrópolis
Petrópolis-RJ

<http://lattes.cnpq.br/6953341335801500>

Álvaro Martins Braun

Faculdade de Medicina de Petrópolis
Petrópolis-RJ

<http://lattes.cnpq.br/7139346462123483>

Anna Beatriz Leal Guimarães de Castro

Faculdade de Medicina de Petrópolis
Petrópolis-RJ

<http://lattes.cnpq.br/3418034202014196>

Victória Lopes Paranhos Gonçalves Pinto

Faculdade de Medicina de Petrópolis
Petrópolis-RJ

<http://lattes.cnpq.br/3027867715833853>

Mariana Lima e Silva

Faculdade de Medicina de Petrópolis
Petrópolis-RJ

<http://lattes.cnpq.br/6343834310630763>

Thaís Oliveira dos Santos

Faculdade de Medicina de Petrópolis
Petrópolis-RJ

<http://lattes.cnpq.br/1342867823065292>

All content in this magazine is licensed under a Creative Commons Attribution License. Attribution-Non-Commercial-Non-Derivatives 4.0 International (CC BY-NC-ND 4.0).



Ângela Caroline Dias Albino Destro de Macêdo

Department of General Surgery at: Hospital Alcides Carneiro
Petrópolis-RJ
<http://lattes.cnpq.br/5233022489335887>

Gabriele Martins Schoeler

Department of General Surgery at: Hospital Alcides Carneiro
Petrópolis-RJ
<http://lattes.cnpq.br/2354581330351038>

Rafaela Rocha Bedran

Department of General Surgery at: Hospital Alcides Carneiro
Petrópolis-RJ
<http://lattes.cnpq.br/3753736589137672>

Eva Andréa Dueñas Trindade

Department of General Surgery at: Hospital Alcides Carneiro
Petrópolis-RJ
<http://lattes.cnpq.br/9523341474649302>

Caroline Pollazzon Leite

Department of General Surgery at: Hospital Alcides Carneiro
Petrópolis-RJ
<http://lattes.cnpq.br/5548322702876753>

Regina Fátima Freire Quintaes

Department of General Surgery at: Hospital Alcides Carneiro
Petrópolis-RJ
<http://lattes.cnpq.br/5138844671312485>

Abstract: The presence of air in the intestinal wall, termed pneumatosis intestinalis (pneumatosis intestinalis - IP), is a frequent radiological finding that presents a multifactorial etiology. Individuals presenting with this alteration are mostly asymptomatic; however, in certain situations, the condition can develop into serious complications requiring immediate intervention. The present report describes a 65-year-old male, alcoholic and smoker, in the presence of COVID-19 infection, presenting with acute abdomen with surgical indication. At exploratory laparotomy, diffuse intestinal pneumatosis and volvulus of a previous latero-lateral anastomosis were evidenced, with distention upstream from the ileum to the cecum and with an aspect of ischemia. Postoperatively, he progressed with hemodynamic instability requiring admission to the intensive care unit (ICU). He responded well to therapy and was discharged from the hospital on the 10th postoperative day. In pneumatosis intestinalis (PI), it is important to elucidate its etiology - idiopathic or secondary to mechanical, infectious, and autoimmune causes - to adopt the appropriate therapy. COVID-19 infection, when severe, may present with extrapulmonary symptoms, and it is not yet known whether these can be used as clinical markers of higher levels of viremia or from a secondary pathophysiological process. Although the pathophysiological relationship between COVID-19 infection and PI is still unknown, one of the most accepted theories states that the release of gas from the alveolar lesion can travel through the mediastinum and retroperitoneum reaching the intestinal wall. Thus, it is evident that a better study of the relationship between COVID-19 infection and its repercussions on the gastrointestinal tract, especially with respect to pneumatosis intestinalis, is necessary.

Keywords: Pneumatosis intestinalis,

COVID-19, computed tomography and exploratory laparotomy.

INTRODUCTION

The presence of air in the intestinal wall is called pneumatosis intestinalis (IP), a rare condition shown in imaging tests, with Computed Tomography (CT) being the most sensitive. Most patients are asymptomatic, but they can develop serious complications, requiring immediate intervention. Therefore, it is important to correlate clinical, laboratory, and imaging data for the best possible evaluation and management.⁴ This paper aims to discuss the case of a patient with complicated IP associated with COVID-19, with exploratory laparotomy (EL) indicated for better elucidation. of the case.

CASE REPORT

Male, 65 years old, alcoholic and smoker, reporting chronic diarrhea, abdominal distension and hyporexia, with 2 months of evolution. In the 48 hours prior to admission, he had nausea, vomiting, hypotension and acute abdominal pain. Upon admission, CT showed dilation of the gastric and intestinal loops with a fluid level, without a stenotic point, in addition to voluminous pneumoperitoneum (Figures 1 and 2). Associated with this, laboratory tests indicated leukocytosis and a significant increase in C-reactive protein, and the COVID-19 test was positive.



Figure 1: Diffuse pneumatosis in intestinal loops, dilation of loops and pneumoperitoneum

Source: Compiled by the Authors, 2023

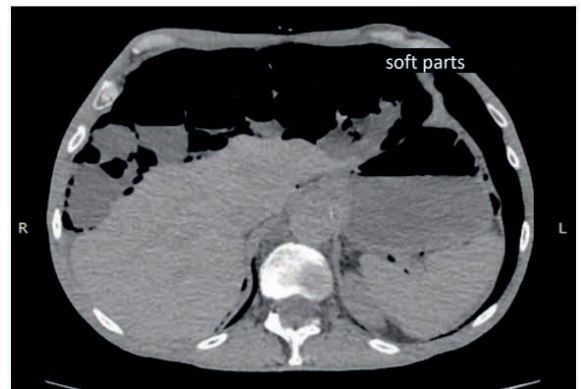


Figure 2: Voluminous pneumoperitoneum, gastric distention and fluid volume

Source: Compiled by the Authors, 2023

Opted for a surgical approach, the LE identified: diffuse intestinal pneumatosis, volvulus from a previous side-to-side anastomosis with upstream distension extending from the ileum to the cecum, in an aspect of ischemia, without free fluid or perforation. Segmental enterectomy was performed contemplating previous anastomosis, with correction of torsion of the loops and meso, after puncture of the cecum to facilitate the maneuver. Finally, a side-to-side anastomosis was performed with closure in two planes.



Figure 3: Intestinal part of the enterectomy showing the presence of intestinal pneumatosis

Source: Compiled from the authors, 2023

The patient was transferred to the ICU, on mechanical ventilation, and an antibiotic regimen with ciprofloxacin and metronidazole was started. In the first 24 hours after surgery (PO), he presented hemodynamic instability with severe arterial hypotension, requiring the initiation of noradrenaline in an infusion pump and arterial puncture for invasive blood pressure measurement. Due to the high output in the nasogastric tube (NGT), this was maintained in siphoning. On the 3rd PO day, the patient remained stable, responding well to weaning from amines and sedation. Thus, extubation was performed and a Venturi mask was installed. It evolved with a drop in the output of the nasogastric tube, making it possible to remove it; stable hemodynamic picture allowing complete weaning of amines; and remained on supplemental oxygen until the 5th PO day. Transferred to infirmary, evolved to an oral diet on the 6th day, with good acceptance, preserved physiological functions and good pain control, until hospital discharge on the 10th PO day. The histopathological analysis of the surgical specimen identified a lesion formed by multiple cysts with cells without atypia, possibly corresponding to lymphangioma.

DISCUSSION

In pneumatosis intestinalis (IP), it is important to elucidate its specific etiology - idiopathic or secondary to mechanical, infectious and autoimmune causes - in order to adopt adequate therapy. At CT, evidence of air in the intestinal wall in the form of bubbles/cysts is typical of the idiopathic form, while the linear/curvilinear type is frequent in the secondary form.¹ Also, on radiological examination, signs of complications can be identified, such as perforation, obstruction, mesenteric ischemia, which also influences the choice of therapy.

COVID-19 infection, in severe cases, may present with extrapulmonary symptoms, such as diarrhea, vomiting, nausea, anorexia, abdominal pain and irritable bowel syndrome, and it is not yet known whether these symptoms are a clinical marker of levels higher levels of viremia or from a secondary pathophysiological process. Some studies point out that the strong affinity of the virus with the angiotensin-converting enzyme receptor causes a greater progression of the pathology. Since the gastrointestinal tract is a place with a large amount of this receptor, it becomes more susceptible, and it can be assumed that COVID-19 would be an important factor in the progression of the case under study.³

Although the exact pathophysiology of IP is unknown, one of the theories states that the release of gas resulting from alveolar injury can travel through the mediastinum and retroperitoneum to the intestinal wall. Furthermore, another possible correlation between COVID and IP is the quantitative increase of bacteria in the gastrointestinal tract, leading to greater gas release and consequent increase in intraluminal pressure, increased permeability and mucosal rupture.² Thus, the gas would be diffused in the layers of

the intestinal wall.

CONCLUSION

There is little information in the literature regarding the correlation between COVID-19 and IP. However, although not yet fully clarified, it is possible to establish an important relationship between COVID-19 infection and manifestations of the gastrointestinal tract.

The deepening of knowledge about intestinal pneumatosis, in addition to the evaluation of clinical and laboratory parameters, are essential to correctly guide its management. Management can range from conservative to urgent surgical approach, avoiding delay in those who benefit from surgery, as in the reported case.

REFERENCES

1. Delgado A.A. *et al.* Pneumatose intestinal: relato de caso. **GED gastroenterol. endosc. dig.** 2017;
2. Ribeiro-Junior M A F *et al.* Complicações Gastrointestinais causadas pelo coronavírus (COVID-19). **Arquivos Brasileiros de cirurgia digestiva.** Relato de caso. Sorocaba-SP 2021;
3. Silva J N *et al.* Desordens gastrointestinais associadas à infecção pelo sars-CoV-2: síntese de evidências. **Brazilian Journal of Health Review**, Curitiba 2021;
4. Yazdi S A M. *Intestinal volvulus secondary to pneumatosis intestinalis: A case report.* **International Journal of Surgery Case Reports** 2021.