



COVID-19 and Diverticulitis: What are the Issues

Papagrigoriadis S^{1*} and Charalambopoulos A²

¹Metropolitan General Hospital, Athens, Greece & King's College Hospital, UK

²National and Kapodistrian University of Athens, Medical School, 3rd Surgery Unit, Attikon University Hospital of Athens, Greece

Editorial

Since 2019 humanity is living the COVID-19 pandemic which has occupied most of our biomedical clinical and research resources. Our knowledge of COVID-19 and the SARS-CoV-2 virus is still evolving daily and even though there are numerous things we have learned there are unfortunately even more that we do not know yet.

We know now that even though SARS-CoV-2 is a predominantly respiratory virus it also affects several other systems, and the gastrointestinal tract is one of the common virus targets: Up to 70% of COVID patients have some gastrointestinal symptoms such as abdominal pain, nausea, vomiting and diarrhea [1].

Diarrhea as the predominant symptom, lasting up to 14 days has been described by Han et al. [2]. The patients had a later presentation and longer course than the respiratory ones. Confirmation of the diagnosis was with a positive stool test. A systematic review on 4,805 patients found that 12% of patients had gastrointestinal symptoms and fecal test was positive in more than 40% of cases [3].

We now believe that a key factor for the vulnerability of the intestines to the SARS-CoV-2 virus is the high content of the Angiotensin-Converting Enzyme 2 (ACE2) on the intestinal epithelial cells [4]. Live SARS-CoV-2 virus is found in the faces of COVID – positive patients [5]. There is evidence that the infection causes multiple microthrombi in the intestinal vessels which result in the breakdown of the gut barrier [6]. Simultaneous existence of COVID-19 infection with acute intestinal emergencies such as acute mesenteric ischemia and intestinal perforation, have been described since the early days of the pandemic [7-9].

It is believed that the mode of action of the virus on the intestinal epithelium is similar to that in the lungs, i.e., *via* entry of the virus into the epithelial cells via the ACE 2 receptor binding to the spike protein [10]. It is noted that patients with inflammatory bowel disease express higher levels of ACE 2 on the epithelium [11].

Infection of the gastrointestinal tract with SARS-CoV-2 has multiple implications for the patient but also for the health service. It presents a diagnostic problem, an infection hazard during diagnostic procedures and especially during endoscopy via aerosol spread transmission and it presents a lethal risk if emergency surgery for a gastrointestinal emergency may be required [12]. A colonoscopy after diverticulitis now carries some additional concerns. Acute diverticulitis is one of the commoner intestinal emergencies and the question is whether its presentation or clinical course has been altered in the pandemic era. There is not enough information yet on diverticulitis and COVID-19, but some isolated reports have started to emerge.

There are two questions of interest: The first one is whether COVID-19 affects the occurrence or clinical course of acute diverticulitis. The second question is whether COVID-19 is affecting the management of diverticulitis by the health services. A colonic perforation from diverticulitis as a potential complication of SARS-CoV-2 has been described on a 38-year-old male [13].

Weissman et al. [14] described a case of a 61-year-old-female post-renal transplant for lupus nephritis who presented with concurrent COVID-19 pneumonia and acute diverticulitis. Treatment with antibiotics was successful. It is an established fact that renal transplant patients are at risk for diverticulitis due to their immunosuppression. We also know that renal transplant patients may be incapable to produce adequate antibodies to SARS-CoV-2 even after repeat vaccination doses. It may be that the underlying immunosuppression acts synergistically for the manifestation of both diverticulitis and COVID-19.

A UK study compared acute diverticulitis admissions before and after the start of the pandemic

OPEN ACCESS

*Correspondence:

Savvas Papagrigoriadis, Metropolitan General Hospital, Athens, Greece & King's College Hospital London, UK, E-mail: spapagrigoriadis@nhs.net

Received Date: 12 Aug 2022

Accepted Date: 23 Aug 2022

Published Date: 26 Aug 2022

Citation:

Papagrigoriadis S, Charalambopoulos A. COVID-19 and Diverticulitis: What are the Issues. *Clin Surg.* 2022; 7: 3566.

Copyright © 2022 Papagrigoriadis S. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

[14]. They examined 52 patients and found that diverticulitis was of more advanced Hinchey stage on CT scan and they required more emergency surgery during the pandemic (7.6% vs. 0.9%). Mortality was the same in this series. The interpretation of the findings is still unclear. This is a disconcerting finding because if it continues it is likely to eventually lead to increased morbidity, mortality and resource implications.

Aulet et al. [15] found that during the pandemic admissions with diverticulitis became more complicated, with higher death rates and more readmissions. A selection of more severe cases was hypothesized. The concurrent manifestation of complicated diverticulitis and COVID-19 positivity happens increasingly during the pandemic. There are many questions as to the best practice and the evidence does not exist yet. A small study by Guerci et al. [16] describes the successful management (in two cases conservative and in one surgical) of COVID-infected complicated diverticulitis alerting to the increased complexity of those cases.

There are several medications used in serious COVID-19 infection and some of those have side effects and adverse effects on the bowel and more specifically on diverticulitis. Steroids and anti-inflammatories which are used in severe COVID-19 are also known to increase the risk of perforation and diverticulitis in patients with asymptomatic diverticula. Two cases of jejunal diverticula perforation described by Galam et al. [17] were thought to be the result of high dose steroids given for severe COVID-19 infection.

The access of patients with acute diverticulitis to hospital facilities and CT scanning during the COVID-19 pandemic has been questioned in an Italian study by Cirocchi et al. [18]. The authors examined 25 contemporary trials on diverticulitis, and they found that the total number of diverticulitis cases appeared decreased, but the number of complicated cases was increased. There was a tendency for increased treatment by conservative means and/or percutaneous drainage and when surgery was applied it would be more likely to be open rather than laparoscopic. The findings reveal the effect that the COVID-19 has had on hospital resources, and this can be observed in the needs of diverticulitis patients in the same way as with patients with other acute conditions.

Gibson et al. [19] found that the pandemic caused a decrease of the non-complicated diverticulitis cases but the complicated ones remained the same, a fact which is interpreted but his reluctance of patients to attend the emergency services during the pandemic. The delay may result in more diverticular abscesses forming and seeking help late in hospital [20].

The American College of Physicians has recently issued a renewed guidance that uncomplicated cases of acute diverticulitis can be safely treated with antibiotics at home. How about the COVID vaccines? Ajmera et al. [21] published a case report that claimed the association of acute diverticulitis with colonic microperforation of an obese 41-year-old male within 24 h from receipt of a Moderna COVID-10 booster vaccine [22]. This is clearly a case report without any causative evidence but surveillance of the COVID vaccines should continue in the present time.

Our conclusions are the following:

- COVID-19 – associated diverticulitis is rare in terms of pathogenesis but there may be an indirect adverse impact of the pandemic on patients with acute diverticulitis.

- Hospitalized COVID patients often must be treated with medication, such as steroids and non-steroidal anti-inflammatories which are known to cause complications (perforation or acute bleeding) of diverticulitis. Clinicians should be alert to that possibility when prescribing those medications.

- The pandemic has caused the alteration of the clinical profile of hospitalized diverticulitis towards more complicated cases which present late. Until the situation normalizes there needs to be extra attention to community – orientated protocols for outpatient treatment of diverticulitis to prevent the rise of complications.

References

1. Ong J, Dan YY, Low JG. The atypical presentation of COVID-19 as gastrointestinal disease: Key points for primary care. *Br J Gen Pract.* 2020;70(696):360-1.
2. Han C, Duan C, Zhang S, Spiegel B, Shi H, Wang W, et al. Digestive symptoms in COVID-19 patients with mild disease severity: Clinical presentation, stool viral RNA testing, and outcomes. *Am J Gastroenterol.* 2020;115(6):916-23.
3. Parasa S, Desai M, Thoguluva Chandrasekar V, Patel HK, Kennedy KF, Roesch T, et al. Prevalence of gastrointestinal symptoms and fecal viral shedding in patients with coronavirus disease 2019: A systematic review and meta-analysis. *JAMA Netw Open.* 2020;3(6):e2011335.
4. Xiao F, Sun J, Xu Y, Li F, Huang X, Li H, et al. Infectious SARS-CoV-2 in feces of patient with severe COVID-19. *Emerg Infect Dis.* 2020a;26:1920-2.
5. Wang W, Xu Y, Gao R, Han K, Wu G, Tan W. Detection of SARS-CoV-2 in different types of clinical specimens. *JAMA.* 2020;323:1843-4.
6. Wu X, Jing H, Wang C, Wang Y, Zuo N, Jiang T, et al. Intestinal damage in COVID-19: SARS-CoV-2 infection and intestinal thrombosis. *Front Microbiol.* 2022;13:860931.
7. Lotti M, Giulii Capponi M, Magnone S, Campanati L, Lucianetti A. Beware of the acute bowel disease in COVID-19 patients. *ANZ J Surg.* 2020;90(12):2586-8.
8. Patel S, Parikh C, Verma D, Sundararajan R, Agrawal U, Bheemisetty N, et al. Bowel ischemia in COVID-19: A systematic review. *Int J Clin Pract.* 2021;75(12):e14930.
9. Estevez-Cerda SC, Saldaña-Rodríguez JA, Alam-Gidi AG, Riojas-Garza A, Rodarte-Shade M, Velazco-de la Garza J, et al. Severe bowel complications in SARS-CoV-2 patients receiving protocolized care. *Rev Gastroenterol Mex (Engl Ed).* 2021;86(4):378-86.
10. Xiao F, Tang M, Zheng X, Liu Y, Li X, Shan H. Evidence for Gastrointestinal Infection of SARS-CoV-2. *Gastroenterology.* 2020;158(6):1831-1833.e3.
11. Nowak JK, Lindstrøm JC, Kalla R, Ricanek P, Halfvarson J, Satsangi J. Age, inflammation, and disease location are critical determinants of intestinal expression of SARS-CoV-2 Receptor ACE2 and TMPRSS2 in inflammatory bowel disease. *Gastroenterology.* 2020;159(3):1151-1154.e2.
12. Hunt RH, East JE, Lanas A, Malfertheiner P, Satsangi J, Scarpignato C, et al. COVID-19 and gastrointestinal disease: Implications for the gastroenterologist. *Dig Dis.* 2021;39(2):119-39.
13. Patel P. Acute perforated diverticulitis as a potential complication of Sars-CoV-2. *Am J Gastroenterol.* 2020;115:S1625.
14. Hossain N, Naidu V, Hosny S, Khalifa M, Mathur P, Al Whouhayb M. Hospital presentations of acute diverticulitis during COVID-19 pandemic may be more likely to require surgery due to increased severity: A single-centre experience. *Am Surg.* 2020;3134820982560.
15. Aulet TH, Spencer SB, Abelson J, Breen E, Kuhnen A, Saraidaridis J, et al. Impact of the early COVID-19 surge on the outcomes of diverticulitis. *Dis Colon Rectum.* 2021;64(5):51.

16. Guerci C, Goi G, Maffioli A, Bondurri A, Danelli P. Diverticulite aguda em pacientes com COVID-19: Manejo paralelo em três casos. As diretrizes estão se adaptando? *Relatos Casos Cir.* 2021;(3):e2964.
17. Galam P. Perforation of jejunal diverticula in COVID-19 positive patients: A case series. *J Clin Diag Res.* 2022;16(5):1-4.
18. Cirocchi R, Nascimbeni R, Burini G, Boselli C, Barberini F, Davies J, et al. The management of acute colonic diverticulitis in the COVID-19 era: A scoping review. *Medicina (Kaunas).* 2021;57(10):1127.
19. Gibson AL, Chen BY, Rosen MP, Paez SN, Lo HS. Impact of the COVID-19 pandemic on emergency department CT for suspected diverticulitis. *Emerg Radiol.* 2020;27(6):773-80.
20. Zintsmaster MP, Myers DT. Patients avoided important care during the early weeks of the coronavirus pandemic: Diverticulitis patients were more likely to present with an abscess on CT. *Emerg Radiol.* 2021;28(2):279-82.
21. Qaseem A. Diagnosis and management of acute left-sided colonic diverticulitis: A clinical guideline from the American college of physicians. *Ann Intern Med.* 2022;175(3):399-415.
22. Ajmera K, Bansal R, Wilkinson H, Goyal L. Gastrointestinal complications of COVID-19 vaccines. *Cureus.* 2022;14(4):e24070.