

## Case Report

# Ischemic Colitis in a Middle-Aged Man With COVID-19: Case Report and Review of Literature

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## Abstract

### Introduction

Coronavirus disease 2019 (COVID-19) was a pandemic that began in 2019 and continues to have morbid and deadly consequences throughout the world. During the beginning of the pandemic, many considered older adults and immunocompromised younger adults to be the only populations at risk for the severe consequences of COVID-19. Throughout the pandemic, this was proven wrong with several case reports and studies showing that relatively younger adults can also suffer serious consequences from this perplexing virus.

### Case Presentation

We report a rare case of ischemic colitis in a 42-year-old obese man who presented to the emergency department with quintessential COVID-19 symptoms. During his hospital course, he developed not only respiratory failure but also ischemic colitis, although he had no past medical history of any coagulopathy and was never on any pressors.

### Conclusion

As more case reports are being published, it has become evident that COVID-19 has the ability to cause serious extrapulmonary consequences due to an imposed state of hypercoagulability, and younger adults are at risk of facing these consequences, especially if they are obese. Thus, it is imperative that younger adults seek out the COVID-19 vaccine when available to them not only to protect those most vulnerable around them but also to protect themselves from these complications.

### Keywords

COVID-19; SARS-CoV-2; ischemic colitis; adult; middle aged; intestinal diseases; vascular diseases

## Introduction

The coronavirus disease 2019 (COVID-19) was a pandemic with massive social repercussions during the years 2020-2023. There has been a wide array of manifestations for those infected with the virus, ranging from very mild symptoms not requiring medical attention to intensive care unit (ICU) admission and death. An early public misconception of the COVID-19 pandemic was that only the elderly suffered the worst outcomes from the virus. However, in reality, younger adults also endured numerous morbidities as well as possible mortality, especially if they had comorbidities.<sup>1</sup>

COVID-19 is generally known to cause respiratory issues with the worst pulmonary outcome being acute respiratory distress syndrome. However, extrapulmonary manifestations of COVID-19 have come to light and are thought to be due to the virus' interaction with angiotensin-converting enzyme 2 (ACE2) receptors, possibly causing cytokine storms or even disseminated intravascular coagulation (DIC).<sup>1-4</sup> Extrapulmonary manifestations that have come to light are elevated troponin, venous thromboembolism, Kawasaki-like disease, DIC, anorexia, diarrhea, liver injury, pancreatic injury, stroke, headache, proteinuria, skin rash, myalgias, rhabdomyolysis, ketosis in nondiabetic

patients, and adrenal insufficiency.<sup>5</sup> As the pandemic has progressed to an endemic state, it is still important to acquire as much information as possible about all manifestations of COVID-19 to really understand the true repercussions of this virus.

### Case Presentation

A 42-year-old obese male with a body mass index of 38 presented to the emergency department with COVID-19 symptoms consisting of increasing shortness of breath, non-radiating substernal chest discomfort/tightness, worsening nonproductive cough, and subjective fevers/chills and body aches as well as decreased taste. The patient had a past medical history of morbid obesity, diabetes, schizophrenia, depression, anxiety, and bipolar disorder. The patient was admitted to the floor and subsequently developed mycoplasma pneumonia with acute respiratory failure, hypoxia, and sepsis and was admitted to ICU on hospital day 4. He was treated with remdesivir and convalescent plasma and ultimately required intubation, an eventual placement of a tracheostomy, and a percutaneous endoscopic gastrostomy tube, and he underwent several days of prone positioning. About 3 weeks into his hospital stay, the patient developed unexplained abdominal distention, without blood in his stool. He was afebrile but tachycardic. On physical exam, he

was still intubated with a distended, firm abdomen that was tympanic to percussion. His labs were unremarkable with a normal white blood cell count and lactic acid level. Imaging revealed pneumatosis of the colon as well as air in the portal vein and mesenteric vessels (**Figure 1**).

The patient was emergently taken to the operating room where diagnostic laparoscopy was converted to open exploratory laparotomy. There were findings of colonic dilation and a patchy ischemia of the cecum with impending rupture. A right hemicolectomy with primary anastomosis was performed. On postoperative day 3, the patient received 1 unit of packed red blood cells but did not require any pressor support. There was a return of bowel function on postoperative day 7. The patient was on total parenteral nutrition (TPN) around the time of surgery and eventually progressed to a dysphagia diet over the rest of his hospital stay. On postoperative day 30, the patient was discharged to an extended care facility for aggressive physical therapy and continued ventilatory support requiring further outpatient trach collar trials.

### Discussion

Evidence regarding the complications and care of COVID-19 is still growing; however, there have been several case reports and studies that



**Figure 1.** A CT scan of the abdomen/pelvis from the day of presentation shows pneumatosis intestinalis (white arrow).

have identified ischemic colitis as a manifestation of COVID-19. In New Jersey, an early hub of COVID-19 infection in the United States, Singh et al presented the hospital course of an 82-year-old woman and Chan et al presented the hospital course of a 73-year-old man who both developed ischemic colitis after being diagnosed with COVID-19. Almeida et al in Spain compared and contrasted 3 different patients, with ages ranging from 56 to 76, who were diagnosed with COVID-19 and later developed ischemic colitis.<sup>1,6,7</sup> In these case reports, the patients did not have any comorbidities that would evidently cause ischemic colitis. This case is unique in that, in addition to our patient not having any factors that would predispose him to a hypercoagulable state or ischemic colitis, he is also younger than age 50 as compared to the other cases reported.

Several possible mechanisms have been identified for the cause of a hypercoagulable state in those with COVID-19 resulting in associated ischemic extrapulmonary outcomes. For example, COVID-19 has been found to have a high affinity for the ACE2 receptor, which is found in type 2 pneumocytes, enterocytes of the ileum, colon, cholangiocytes, and beta cells of the pancreas.<sup>2,8</sup> When COVID-19 binds to the ACE2 receptors, it causes damage and inflammation of these cells resulting in an inflammatory and hemostatic response.<sup>3,9</sup> Associated endothelial damage has been found to result in cytokine storm, which younger adults are more prone to, and ultimately increases procoagulant factors.<sup>2,8</sup> Additionally, COVID-19 has been found to cause systemic inflammatory response syndrome and/or sepsis, which are associated with DIC and thrombosis due to massive fibrin deposits associated with elevated D-dimer and low platelets.<sup>10</sup> Remdesivir was a promising treatment for COVID-19 and remains one of the mainstay treatments in combination with corticosteroids for patients hospitalized with COVID-19. The current vaccines available are 95% effective in preventing people from acquiring the virus.<sup>11,12</sup>

General risk factors for ischemic colitis are myocardial infarction, hemodialysis, medications (particularly pressors), aortoiliac instrumentation/surgery, cardiopulmonary bypass, extreme exercise, mesenteric arteriovenous fistula or malformation, and acquired or he-

reditary thrombophilia.<sup>7,13</sup> In patients under 65, specific risk factors are alcohol consumption, abdominal surgery, hypertension, malignant disease, and laxative/enema use.<sup>14</sup> Our patient did not meet any of these criteria. It has been determined though that risk factors for COVID-19 severity include increased age, diabetes, immune suppression, and organ failure. Additionally, obesity in patients younger than 60 has been established to have a statistically significant increase in the probability of ICU admission if they presented to the hospital with COVID-19.<sup>6</sup> Thus, this patient only had COVID-19, and its effects (ie, hypercoagulability and hypoxia), as a risk factor for developing ischemic colitis.

The limitations of this study are that it is a subjective piece of evidence. However, during this rapidly evolving experience, there has been limited time for scientific studies of high statistical validity to be performed. As a result, case studies have been found to be valuable in recognizing new and important extrapulmonary manifestations of COVID-19. Additionally, the public tends to view older adults as being the only population at risk; however, younger adults with immunodeficiencies are also at risk and even younger adults with no major comorbidities are at risk of suffering very serious repercussions of COVID-19. Adults less than 60 years old have been found to develop respiratory failure at the same rate as their older counterparts, as well as extrapulmonary manifestations, which result in severe consequences. The effects of COVID-19 are likely due to its affinity for ACE2 receptors and subsequent pulmonary and intestinal inflammation, which can lead to a critical cytokine storm in younger adults with resultant hypercoagulability and unexpected consequences. Thus, this case report further supports how imperative it is for relatively healthy younger adults to seek out the COVID-19 vaccine to not only protect the older adults of their community but to also protect themselves from such potentially morbid complications.

## Conclusion

COVID-19 complications are typically thought to affect only the elderly; however, younger adults may also develop the terrible pulmonary and extrapulmonary effects of COVID-19, such

as ischemic colitis. Thus, it is imperative that younger adults also receive the COVID-19 vaccine when it is available to them.

### Acknowledgments

The authors thank Drs Sahand Bamarni and Sarah Zajd for their work on the initial draft of this article.

### Conflicts of Interest

The authors declare they have no conflicts of interest.

The authors are employees of HCA Florida Brandon Hospital, a hospital affiliated with the journal's publisher.

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

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