

CASE REPORT

Ogilvie's Syndrome - A Complication of Severe COVID-19 Infection

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ABSTRACT

A higher rate of gastrointestinal complications has been shown in COVID-19 patients admitted to the intensive care unit than their counterparts without COVID-19. Ogilvie's syndrome or acute colonic pseudo-obstruction is described as colonic distension without mechanical obstruction, usually caused by infections, opioid use, renal dysfunction, and electrolyte imbalance. We report a patient with Ogilvie's syndrome probably secondary to COVID-19. The patient was a 51-year-old man diagnosed as category 5 COVID-19, requiring intensive care treatment and mechanical ventilation. He developed transverse colonic perforation following large bowel dilatation, for which laparotomy and colectomy were done. Unfortunately, he succumbed to death due to intrabdominal sepsis with multiorgan failure. Possible pathogenesis of ileus in severe COVID-19 infection includes viral-induced autonomic nervous system dysfunction, viral-induced gut inflammation mediated by ACE-2 receptors located on the enterocytes, and ischaemic endothelialitis.

Keywords: Ogilvie syndrome, gastrointestinal complications, Covid-19, paralytic ileus, critical care

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INTRODUCTION

Since the worldwide transmission of the recent Coronavirus disease 2019 (COVID-19) pandemic, significant extrapulmonary complications affecting multiple organ systems have been observed in patients with COVID-19. Gastrointestinal complications have often been described, with an incidence rate of 20%. (1) Most infected patients with gastrointestinal involvement presented with a spectrum of symptoms. The symptoms are usually mild such as reduced oral intake, abdominal discomfort with nausea, vomiting, diarrhoea, and elevated liver enzymes. However, there have been reports of severe complications like bowel ischaemia. We report a case of Ogilvie's syndrome probably secondary to COVID-19 infection.

CASE REPORT

A 51-year-old gentleman with multiple comorbidities, including hypertension, type 2 diabetes mellitus complicated with retinopathy, and class III obesity with a BMI of 45. He presented with five days history of fever, cough, and sore throat. Oro and nasopharyngeal swab

reverse transcriptase-PCR was taken, and the result was positive for COVID-19. Chest x-ray showed middle and lower zone haziness in keeping with atypical pneumonia. He appeared lethargic, tachypnoeic and desaturated despite receiving oxygen therapy and was intubated for acute respiratory distress and given ventilatory support. He received local protocol guided treatment for COVID-19, which includes methylprednisolone pulse therapy 500mg stat dose and maintenance doses of 2mg/kg/day for five days with antibiotics amoxicillin-clavulanic acid to cover for concomitant community-acquired pneumonia. Ferritin level was 1097.2 mcg/L, and C reactive protein level was 71.7 mg/L, which prognosticate a severe form of COVID-19. Throughout the first few days of ICU stay, he developed non-oliguric acute kidney injury, which later improved gradually. On day 5 of hospitalization, examination revealed tense and distended abdomen with absent bowel sound. Contrast-enhanced computer tomography (CECT) was performed and showed dilated right-sided colon without mechanical obstruction. His disease was also complicated with elevated liver enzymes where Alanine aminotransferase was 265 U/L, and Aspartate aminotransferase was 1495 U/L. He was extubated to high flow nasal cannula on day 6 as arterial blood gas analysis was satisfactory and abdominal distension did not worsen. However, on day 7 of the ICU stay, he appeared to be more tachypnoeic and desaturated with persistent fever. Antibiotic was escalated to piperacillin/

tazobactam in view of worsening inflammatory markers and the possibility of nosocomial pneumonia. Repeated chest radiograph showed air under diaphragm while abdominal radiograph revealed distended bowels. (Figure 1). CECT abdomen was repeated and was reported as gross pneumoperitoneum secondary to possible sealed perforation of dilated right-sided colon with no mechanical obstruction (Figure 2). The surgical team's opinion was sought, and bedside peritoneal lavage was performed, revealing a gush of air upon entering the peritoneum. Straw-colored peritoneal fluid with no faeculent material was aspirated. He was treated conservatively as the surgeon thought the perforation had sealed. An intraabdominal drainage catheter was inserted via the Seldinger method for continuous output observation. However, he deteriorated after 72 hours, and an emergency exploratory laparotomy was conducted. A 10cm full-thickness-tear at the hepatic flexure and perforation at the mid-transverse colon with interloop faeculent collection and slough were found intra-operatively. He underwent right hemicolectomy, lavage, and temporary closure of the abdomen. Postoperatively he required high inotropic support and continuous renal replacement therapy. Unfortunately, his condition deteriorated, and he succumbed to death

secondary to intra-abdominal sepsis with multiorgan failure.

DISCUSSION

Gastrointestinal symptoms associated with COVID-19 have been increasingly described. It can mimic gastroenteritis as early symptoms such as nausea, vomiting, diarrhoea, or late complication, presenting as bowel ischaemia and intestinal perforation. (2) Liver involvement is usually mild but will be severe if it is part of multiorgan failure due to the terminal stage of COVID-19 infection. A systemic review of 29 studies showed that 12% of patients with COVID-19 had one or more gastrointestinal symptoms. (3) While in Malaysia, it was reported as 6.9%, and diarrhoea is one of the earliest signs among severe cases. (4)

Various postulations on gastrointestinal involvement in COVID-19 have been presented. Some studies proposed that this virus enters body cells through angiotensin-converting enzyme-II (ACE-II) receptors, which are also highly expressed in the gastrointestinal system, mainly in the small and large intestines. The viral invasion causes gastrointestinal inflammation and enterocytes swelling, which may explain paralytic ileus in severely ill COVID-19 patients. (5) Furthermore, other common causes of acute paralytic ileus are opioid usage, kidney failure, and electrolyte abnormalities, all of which were present in this patient and may have contributed. Viral infections, as in this case, SARs Cov2 infection, are among the most typical causes of Ogilvie's syndrome by causing autonomic nervous system dysfunction leading to acute colonic dilatation without any apparent mechanical obstruction.

Despite the relatively common gastrointestinal presentation, only a few paralytic ileus cases were reported in COVID-19 patients, especially diagnosed



Figure 1: Chest x-ray demonstrates air under diaphragm

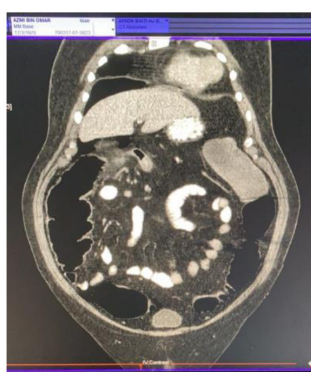


Fig. 2A



Fig. 2B



Fig. 2C

Figure 2A (coronal), 2B (axial), and 2C (sagittal) show different views of abdominal CT scan demonstrating dilated loops of large bowel and pneumoperitoneum.

with colonic paralytic ileus. (2) In our case, the patient had significant dilatation of the large bowel and perforation of the transverse colon. However, there was no finding of thrombosis of the mesenteric vessels in the CT scan. Neither was there histopathological evidence of micro-thrombi formation in the resected specimen sent, which could lead to ischaemia and perforation of the gut.

Abnormal liver enzymes level was also observed in this patient. The typical pathophysiological process is thought to be caused by hepatic ischaemia-reperfusion injury (HIRI). The most recent opinion believes that COVID-19 is a type of vascular disease commonly complicated with thrombosis and coagulopathy. Endothelial cells are infected by the virus leading to diffuse endothelialitis and microvascular dysfunction leading to increased thrombotic states, tissue swelling, and reduce organ perfusion. This may explain the pathogenesis of mid-transverse colon ischaemia and perforation in this patient.

CONCLUSION

This was a rare presentation of a COVID-19 gastrointestinal complication, which subsequently led to death from multiorgan failure. Severe gastrointestinal complications usually worsen the disease's prognosis as it severely impairs the respiratory mechanics, delays commencement of enteral feeding, predispose to secondary sepsis, and hence prolonged ICU stay. For a more prompt treatment, early detection of paralytic ileus as a possible complication is necessary. Once diagnosed, conservative measures such as bowel rest, rectal tube placement, and electrolytes imbalance correction could be employed to treat Ogilvie's syndrome and prevent disease progression.

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