Case Report

Perforated acute abdomen in a patient with COVID-19: an atypical manifestation of the disease

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Abstract

Introduction: The Coronavirus belongs to a family of RNA viruses that can cause respiratory infection, with the possibility of gastrointestinal manifestations in approximately 5–50% of the cases.

Objective: To report a surgical case with a diagnosis of COVID-19 that developed acute perforated abdomen and pneumothorax.

Case report: This was an 80-year-old female patient with respiratory symptoms, with dry cough and fever and diffuse abdominal pain with signs of peritonitis. She had leukocytosis, kidney dysfunction and an increase in D-dimer with positive PCR for COVID. Computed tomography of the chest and abdomen showed pneumothorax on the right and extensive pneumoperitoneum.

Conclusion: The presentation of COVID-19 with severe pulmonary and abdominal complications requires specialized and emergency treatments, but it has high mortality rates.

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Resumo

Abdome agudo perfurativo em paciente com COVID-19: uma manifestação atípica da doença

Introdução: O coronavírus pertence a uma família de vírus RNA que pode causar infecção respiratória com possibilidade de manifestações gastrintestinais em torno de 5% a 50% dos casos.

Objetivo: Relatar caso operado com diagnóstico de COVID-19 e evolução com abdome agudo perfurativo e pneumotórax.
Introduction

The Coronavirus belongs to a family of RNA viruses that can cause respiratory infection with varied symptoms, with COVID-19 being a new type of microorganism belonging to this family described in the last months of 2019, of which symptoms usually include coughing, fever, fatigue, headache and myalgia after 2–14 days of exposure.1–5

The virus enters the cells through the angiotensin-converting enzyme-2 receptor, which is also expressed in the epithelium of the gastrointestinal tract, from the esophagus to the colon.6,7 Gastrointestinal (GI) involvement, described as viral detection in feces and evidence of fecal-oral transmission, can be characterized by abdominal pain, hypoxia, nausea and vomiting1,4,7–9 with a variable incidence ranging from 5% to 50% of cases10,11; it may precede the respiratory symptoms, but they commonly coexist,4 although in 10% of cases the pulmonary imaging exam is normal.12

Additionally, COVID-19 may also predispose to venous and arterial thromboembolic diseases due to excessive inflammation, hypoxia and diffuse intravascular coagulation through the hypercoagulable state triad, blood stasis and endothelial injury.2,8 Sadik et al.13 emphasize the occurrence of vascular thickening and thromboembolic phenomena, mainly in lobar ramifications of the lungs in patients affected by this disease, resulting in increasing hypoxemia with predictive value of adverse results related to D-dimer levels.

The aim is to report on a surgical case treated at Hospital Santa Marcelina, São Paulo, SP, Brazil with a diagnosis of COVID-19 and patient evolution that included acute perforated abdomen and pneumothorax.

Case report

This case was an 80-year-old female patient, hospitalized after 10 days of dry and persistent cough, fever and shortness of breath, already using Tamiflu and Azithromycin for 5 days prescribed at a primary health care unit. She had a previous pathological history of systemic arterial hypertension and ischemic heart disease, and used Clopidogrel, ASA, Losartan and Carvedilol.

On physical examination, she had tachydyspnea, 91% oxygen saturation in ambient air, fever and pulmonary auscultation disclosed decreased breath sounds on the right with crackling rales on the left lung base and diffuse rhonchi, in addition to diffuse abdominal pain and stiffness, not localized and with signs of peritoneal irritation.

Complementary blood tests showed leukocytosis of 19,950 mm3 with 8% rods and 76% segmented, with 3% monocytes, in addition to an increase in platelets to 507,200 mm3, GOT = 23.00 U/L, GPT = 41.00 U/L, elevation in nitrogenous compounds, with creatinine of 5.54 mg/dL and urea of 139 mg/dL. Other associated laboratory alterations were: D-dimer of 1466.8 ng/dL, ferritin of 1199 ng/dL, creatine phosphokinase of 239.00 U/L and positive PCR for COVID-19.

She was submitted to Computed Tomography of the chest, abdomen and pelvis, with evidence of ground-glass pattern in the bilateral pulmonary parenchyma, pneumothorax on the right and extensive pneumoperitoneum, with free intracavitary fluid (Figs. 1 and 2).

Clinical resuscitation measures were initiated, with intravenous hydration, orotracheal intubation, broad-spectrum antibiotic therapy (Tazocin 4.5 g 3×/day and Azithromycin 500 mg/day) and medications for COVID-19. After the initial stabilization, she was submitted to right chest drainage and exploratory laparotomy, with evidence of reduced visceral perfusion in the entire gastrointestinal tract and four punctate lesions in the sigmoid colon, with leakage of fecal content into

Fig. 1 – Computed tomography image showing alveolar interstitial infiltrate and right pneumothorax.
system, promoting abnormal activation of the coagulation system, which manifests itself as generalized small-vessel vasculitis and extensive microthrombi.\textsuperscript{2,8} This fact, associated with the patient’s comorbidities, such as hypertension and coronary disease, are associated with high mortality rates and a high risk of coagulation dysfunction.

In the case reported herein, it is noteworthy that the blood tests showed pulmonary and septic dysfunction at two sites – pulmonary and abdominal. Moreover, the monocyte and transaminase counts were found to be normal and some articles mention the association of these tests with only an abdominal picture in COVID-19.\textsuperscript{4,14}

### Conclusion

The presentation of COVID-19 with severe pulmonary and abdominal complications requires specialized and emergency treatments, but it has high mortality rates.

### Conflicts of interest

The authors declare no conflicts of interest.

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