Case Report

Subacute mesenteric venous thrombosis secondary to COVID-19: A late thrombotic complication in a nonsevere patient

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A B S T R A C T

Subacute mesenteric venous thrombosis is vascular complication commonly associated with hypercoagulability, resulting in abdominal pain and ischemia of intestines. We report a 44-year-old male without relevant history and COVID-19 disease who developed abdominal pain after onset of respiratory symptoms. Imaging studies demonstrated abnormal findings on Doppler ultrasound and computed tomography scan compatible with thrombotic disease, successfully treated with anticoagulation therapy. This case exemplifies the heterogeneous presentation of late thrombotic complications in COVID-19 and the relevance of prophylactic measures against hypercoagulability.

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Introduction

As of January 12, 2020, Ecuador reports 222,567 confirmed cases of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections [1]. Despite all the efforts that have been made to treat coronavirus disease, continues devastating a significant portion of the world’s population, and health care providers continue to see new and frightening displays of its pathogenicity. We describe an otherwise healthy patient with nonsevere COVID-19 and subacute mesenteric venous thrombosis (SMVT). SMVT is a clinical entity characterized by occlusion of abdominal veins, which may lead to intestinal ischemia and necrosis. It is commonly associated to hypercoagulability risk factors for its development. COVID-19 disease clearly induces a hypercoagulability state as a result of the inflammatory state that may end in severe thrombotic complications.

Case presentation

A 44-year-old man, with recent history of COVID-19 disease, presented with severe abdominopelvic pain of progressive and insidious onset, 1 week after diagnosis by RT-PCR testing.
which completely worsened 20 days after initial respiratory symptoms. He does not have any relevant history of illnesses or taking medications before coronavirus disease and maintains a healthy lifestyle, no alcohol consumption, smoking, or other associated risk factors. He reported weight loss and denied the occurrence of coagulation problems in his family. On physical exam, he was afebrile, mild tachycardic, with normal oxygen saturation. The abdomen was soft and tender to deep palpation. Bowel sounds were present but diminished, no bruises or masses were noted suspecting acute abdomen, warranting hospital admission for further evaluation and treatment. The initial differential diagnosis from surgical evaluation for the patient's abdominal pain included mesenteric ischemia, bowel obstruction, and pancreatitis. The abdominal Doppler ultrasound and computed tomography scan was performed which demonstrated defined hypodensities in portal vein, venous filling defects, vein enlargement, and engorgement consistent with thrombosis of mesenteric veins. Laboratory results revealed (leukocytosis [36,870 cells/mm³], thrombocytosis [574,000 cells/mm³], normal INR [1.0], elevated PCR [263.87 mg/L], and elevated ferritin [456.23 ng/mL]). Systemic anticoagulation therapy with enoxaparin and pain control was given. He discontinued all treatments recommended for COVID-19 many days before admission as his respiratory symptoms cleared. The patient was discharged at the sixth day and remained hemodynamically stable without pain, with the plan to be transitioned from enoxaparin to oral anticoagulant therapy with warfarin, and continued anticoagulation for 6 months.

**Imaging studies**

Computed tomographic imaging of the abdomen (Fig. 1) with intravenous contrast showed absence of flow at superior mesenteric, splenic, and portal vein. Doppler ultrasound (Fig. 2) findings are compatible with thrombosis of abdominal veins.

**Discussion**

The COVID-19 pandemic is one of the most critical events for public health since the last pandemic declared many years ago, which has caused millions of deaths around the world. At the end of 2019, a novel coronavirus, actually known as SARS-CoV-2 was identified as the cause of a group of pneumonia cases in Wuhan, a city in the Hubei Province of China. It rapidly spread, resulting in an epidemic throughout China, followed by an increasing number of cases in many other countries and continents around the world [2]. Today, more than 91,290,000 confirmed cases from more than 190 countries and more than 1,950,000 deaths have been documented worldwide [3].

The spectrum of symptomatic infection ranges from mild to critical, where most of them are not severe. Mild (without or mild pneumonia) was reported in 81%, severe disease (with dyspnea, hypoxia, or >50% lung involvement on imaging within 24-48 hours) was reported in 14%, and critical...
disease (with respiratory failure, shock, or multiorgan dysfunction) was reported in 5% [4,5].

Many studies have described the clinical features of the disease. The most common are fever (99%), fatigue (70%), dry cough (59%), anorexia (40%), myalgia (35%), dyspnea (31%), sputum production (27%), diarrhea, and abdominal pain (3% and 10%, respectively). Anosmia and dysgeusia have also been reported as a common symptom of COVID-19 [6]. The major complication reported is acute distress respiratory syndrome in patients with severe disease. Other complications have included arrhythmias, acute cardiac injury, and shock.

After further investigations, an inflammatory response has been described as a primary physiopathological process for severe disease. In a number of patients, the development of thrombotic events has occurred, leading to exploring the reasons behind a hypercoagulability state elicited by COVID-19, which until now is not clearly understood. A variety of changes in circulating prothrombotic factors have been reported in patients with severe infection like elevated factor VIII, elevated fibrinogen, circulating prothrombotic microparticles, and hyperviscosity. Coagulation abnormalities in diseased patients suggest a hypercoagulable state that is related to an increased risk of thrombosis. Laboratory findings abnormalities have been mainly characterized by normal or slightly prolonged levels of prothrombin time (PT) and activated partial thromboplastin time (aPTT), platelet counts normal or increased, fibrinogen increased, and D-dimer increased. Other assays include factor VIII activity increased and Von Willebrand Factor (VWF) antigen greatly increased [7]. Venous thrombotic and thromboembolic complications have also been reported ranging from deep venous thrombosis (DVT) and pulmonary embolism (PE) to arterial events such as acute ischemic stroke or acute limb ischemia [8,9].

Until now, there are no reported cases of COVID-19 disease complicated by SMVT. Venous thrombosis is predominantly a result of stagnation of blood flow, vascular injury, and hypercoagulability. Mesenteric vein thrombosis almost always involves the distal small intestine (superior mesenteric venous drainage) and rarely involves the colon (inferior mesenteric venous drainage). It is considered a multifactorial disorder predisposed by certain risk factors that induce a hypercoagulable state and has been divided into acquired (locally intrabdominal inflammatory processes like pancreatitis, inflammatory bowel disease, nephrotic syndrome, malignancy) and inherited conditions (myeloproliferative disorders, inherited thrombophilia). Any of these conditions could not be identified in our patient.

The presentation of mesenteric venous thrombosis is wide and can be more insidious, with subacute symptoms that can be present for days to weeks before diagnosis, where nonspecific abdominal pain may be the only feature like our patient, which highlights the relevance and peculiarity of a late throm-
basis after the onset of coronavirus disease. This atypical complication encourages and provides to physicians an expanded sight regarding differential diagnoses for acute abdomen, especially in nonsevere patients with COVID-19.

Conclusions

This case exemplifies the heterogeneous presentation of late thrombotic complications in COVID-19. Reports on coagulopathy are on the rise yet the question remains on how to predict these complications. It is relevant to consider prophylactic measures for avoiding hypercoagulability. Progressive diffuse abdominal pain with no significant alterations on coagulation profile or other risk factors should raise the awareness for mesenteric thrombosis. Actually, few cases of intestinal thrombosis exist in the literature considering our patient one of the first cases of subacute mesenteric venous thrombosis in a non-severe COVID-19 patient. More case reports and descriptive data are needed in the literature to increase the index of suspicion for these types of complications.

Patient consent statement

The patient gave the consent for the material about me/the patient to appear in scientific study.

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