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Case Report

Omental infarction in mild Covid-19 infection[☆]Abdurrahman Kaya^{a,*}, Sibel Yıldız Kaya^b, Hakan Baydar^a, Işıl Bavunoğlu^c^a Department of Infectious Disease, Department of Emergency Medicine, Istanbul Training and Research Hospital, Turkey^b Department of Infectious Disease, Sungurlu State Hospital, Turkey^c Department of Internal Medicine, Cerrahpaşa School of Medicine, Istanbul University-Cerrahpaşa, İstanbul, Turkey

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ABSTRACT

COVID-19 is an infection which can present with various clinical manifestations. While it affects respiratory tract primarily, several other manifestations including gastrointestinal involvements have been reported. The prevalence of all gastrointestinal complaints is approximately 17 percent and diarrhea, nausea/vomiting and abdominal pain are the most common symptoms. In COVID-19, acute abdominal pain requiring surgical evaluation and abdominal imaging is uncommon and there is also a lack of knowledge about COVID-19 related gastrointestinal complications. Here, we report a case of mild COVID-19 infection complicated by omental infarction during the course of the illness.

1. Introduction

COVID-19 is a systemic disease affecting not only the lungs, but also many other organs. Early studies have estimated that 30–40% of patients are asymptomatic, regardless of viral load [1,2]. While it primarily affects respiratory tract, several other manifestations including gastrointestinal involvements have been reported. In a meta-analysis, the prevalence of all gastrointestinal complaints was found to be 17.6 percent and gastrointestinal manifestations including diarrhea, nausea, and vomiting were mentioned [3]. In a subsequent meta-analysis consisting of more than 18,000 patients, diarrhea was found to be the most common (11.5 percent) gastrointestinal symptom, followed by nausea/vomiting (6.3 percent) and abdominal pain (2.3 percent) [4]. In COVID-19, acute abdominal pain requiring surgical exploration and abdominal imaging is uncommon and there is also a lack of knowledge about the impact of this infection on gastrointestinal system. Here, we report a case of mild COVID-19 who developed omental infarction during the course of the illness.

2. Case

25-year-old male, a medical doctor, presented with a 2-day of mild cough and myalgia. The patient had no fever, chest tightness, and shortness of breath. His physical examination was normal. On medical history, he had no previous history of chronic diseases and medications.

Also, the patient reported no alcohol intake and smoking. The laboratory values showed a total white blood cells count of 6500 cells/McL, with 70% neutrophils, c-reactive protein (CRP) was 9 mg/L (0–5), D-dimer: 0.19 µg/ml (0–0.5), arterial oxygen saturation 99% in room air, and the other tests were within normal ranges. No chest abnormality was detected on computed tomography (CT). Nasopharyngeal PCR test was positive for SARS-CoV-2. The patient was diagnosed as COVID-19 and favipiravir was initiated. During the quarantine period, while the symptoms were resolving, he developed acute onset abdominal pain on day 7th of the admission. The pain was localized in right upper quadrant and sharp in nature, progressive in the course, and not relieved by over-the-counter medication. During this period, the patient had no fever and nausea/vomiting. Guarding and tenderness were noted on physical examination. Hepatic enzymes were within the normal ranges and serology for human immunodeficiency virus was negative. The patient had mild leukocytosis (13000 cells/McL) and elevated CRP (20 mg/L). No pathology was detected on abdominal ultrasound. A contrast-enhanced abdominal CT revealed a focal area with central soft-tissue attenuation and a peripheral halo in the sub-hepatic area which were typical findings for omental infarction (OI) (Fig. 1). The patient was hospitalized and low molecular weight heparin (2 × 6000 UI/daily) was initiated. Coagulation tests such as D-dimer, fibrinogen, prothrombin time and activated partial thromboplastin time were within the normal values. The other blood analyses including protein S, protein C, antithrombin III, and homocysteine were also unremarkable (Table 1). The

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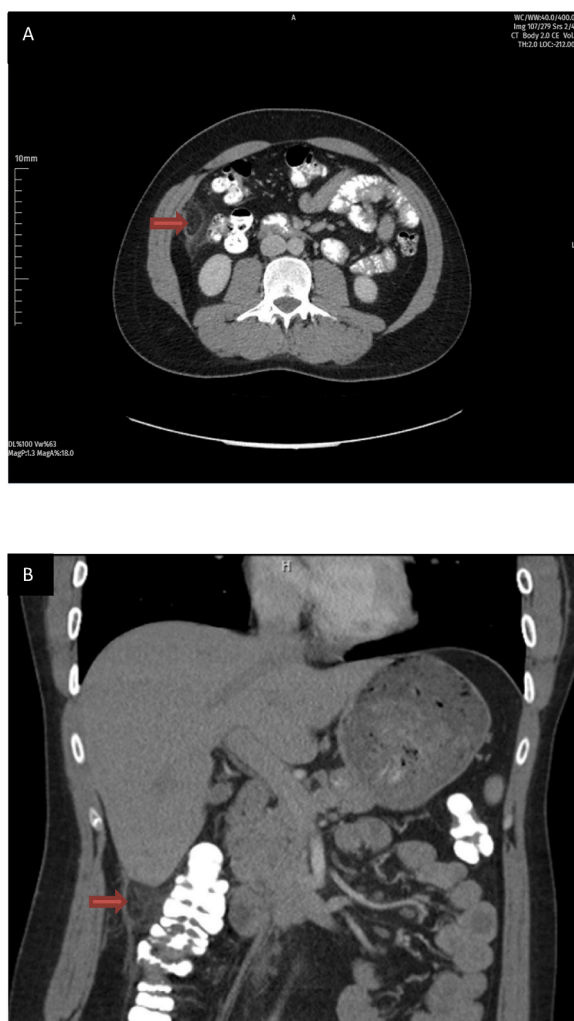


Fig. 1. Axial (A) and coronal (B) contrast-enhanced abdominal CT revealed a focal area with central soft-tissue attenuation and a peripheral halo in the sub-hepatic area (arrows).

Table 1

The laboratory results of the patient.

		Normal range
White Blood Cell count	$13 \times 10^3/\mu\text{L}$	(4–11)
Platelets	$180 \times 10^3/\mu\text{L}$	(140–450)
Fibrinogen	322 mg/dl	(200–400)
D-dimer	0.19 $\mu\text{g/ml}$	(0–0.50)
Homocysteine	11.35 $\mu\text{mol/L}$	(5.6–12.3)
Protein C	105.1%	(70–140)
Protein S	68.3%	(60–130)
Antithrombin III	109%	(79–112)
Prothrombin time	14.3 sec	(10.4–14)
Activated partial thromboplastin time	31.8 sec	(21–32)

abdominal pain was relieved within 2 days and the patient was discharged home on anti-coagulant drug (Rivaroxaban 10 mg/daily). The patient has been doing well and no recurrence has been observed for 6 months.

3. Discussion

OI is a rare cause of acute abdomen and more frequently observed in men. Due to low incidence and non-specific presentation, it is confused with appendicitis, peptic ulcer disease, cholecystitis, and pancreatitis

[5]. It is a benign and self-limited condition and correct identification is crucial to avoid unnecessary surgical intervention, hospitalizations, and antimicrobial treatment. Generally, the final diagnosis is made by abdominal imaging. Based on the pathogenesis, OI is classified into two forms including primary and secondary infarction. The former is idiopathic and occurs spontaneously and the latter is more common and related to some conditions including torsion, trauma, hypercoagulability, vasculitis, and pancreatitis. Commonly, torsion of omentum is due to some predisposing pathologies such as cysts, tumors, intra-abdominal inflammation, surgical wound, hernia, and obesity [6]. In this case, there was no risk factor and CT findings were not compatible with the torsion of omentum. Due to the development of OI during the infection, the patient's condition was thought to be associated with COVID-19.

During COVID-19 infection, a hypercoagulable state may develop and lead to a wide range of coagulation abnormalities including endothelial injury, stasis, and hypercoagulability. All of these predisposing factors can play an important role in the development of thrombosis in patients with severe COVID-19 infection and render them prone to an increased risk of both venous and arterial thromboembolism [7]. Potentially, this condition may result in severe morbidity and mortality. In order to prevent the attendant prothrombotic state, several guidelines recommend prophylactic dose low molecular weight heparin [8,9]. Such life-threatening events also put a therapeutic challenge in clinical practice.

There is limited data about the incidence of gastrointestinal complications (GC) in outpatients, however they are frequently reported in hospitalized patients, especially in intensive care units [10]. Thus, patients with severe COVID-19 are at a particularly higher risk for developing GC. During their prolonged hospitalization, almost 80% of critically ill patients with COVID-19 manifest GC ranging from feeding intolerance to life-threatening conditions including mesenteric ischemia and gastrointestinal bleeding [4,11]. In the literature, a wide variety of GC have been mentioned, from acute liver injury and acalculous cholecystitis to pancreatitis [10]. Among them, mesenteric ischemia is one of the most serious GC in severe COVID-19 patients and its incidence has been reported at 3.8 to 4 percent in a study [11].

In a patient with COVID-19, Ahmed et al. reported the first case of OI who presented with right upper quadrant abdominal pain and did not require surgical intervention [12]. In this report, abdominal pain was developed after a 5-day of mild cough and chest abnormalities were observed on CT. Considering the clinical features, physical examination, and laboratory values, the reported case is clinically similar to our patient. Bruni et al. and Vinas et al. published two patients [13,14]. In the first case, the patient was diagnosed with ischemic gangrenous cholecystitis and OI was diagnosed by biopsy; interestingly CT imaging of this patient was normal for OI. He was severely ill and followed-up in intensive care unit. Similarly, the second case had severe COVID-19 pneumonia and required surgical intervention due to persistent omental hemorrhage. Additionally, both had coagulation abnormalities in their blood tests. Our patient is distinct from both cases because of mild COVID-19 infection and not requiring surgical intervention. Other than OI, Besutti et al. reported abdominal visceral infarction in patients with COVID-19, and splenic and renal infarcts were observed on imaging [15]. In many reports, other visceral organ infarctions were also reported.

In COVID-19, the ischemic etiology is not fully elucidated and has been attributed to thrombotic abnormalities, excessive inflammation, a hypoperfusion state, and a direct inflammatory effect of the virus on the gastrointestinal mucosa [10]. Furthermore, to prevent mesenteric ischemia in patients with COVID-19, limited data are available for empiric therapeutic anticoagulation.

In conclusion, the prothrombotic state during COVID-19 can have major implications in clinical practice. It can cause severe complications. When a patient is presented with severe abdominal pain, OI should be included in differential diagnosis and laboratory tests and diagnostic imaging should be performed.

Authors' contribution

I. A.K: Followed the patient and wrote the paper.

II. S.Y.K: Assisted in writing and edited the paper.

III. H.B: Collected the data and prepared the manuscript.

IV. I.B: Coordinated the study.

All authors participated in writing and revising the manuscript. They have read and approved the final manuscript.

Declaration of competing interest

There is no conflict of interest.

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