Ulcerative Colitis Developed in a COVID-19 Patient: A Case Report

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Abstract

Background: COVID-19 pneumonia is a widespread viral disease, which affects all the world and has been accepted as pandemic by the World Health Organization (WHO). Coronavirus can remain in the stool for certain time even after recovery from COVID-19 pneumonia in some infected patients. Studies increasingly report involvement of other organs including gastrointestinal system in addition to respiratory symptoms in COVID-19. Ulcerative colitis is an inflammatory bowel disease with unknown cause. Emerging data suggest that gastrointestinal system may also be influenced by COVID-19 based via the expression of ACE-2. However, data abour the association of COVID-19 and inflammatory bowel diseases including ulcerative colitis are lacking.

Case Presentation: In this report, we present a case of ulcerative colitis diagnosed in a 50-year-old male patient who presented with the complaints of bloody diarrhea and abdominal pain following the completion of the treatment of COVID-19 pneumonia.

Conclusion: Patients presenting with gastrointestnal complaints should also be evaluated for COVID-19.

Introduction

In December 2019, severe disease cases leading to pneumonia and death were first reported in Wuhan province of Hubei state in China, and the number of cases dramatically soared in a short time and rapidly spread in almost all countries in the world (1). Coronaviruses are enveloped, single-strand RNA viruses that can infect a wide range of hosts including avians, wild, domestic mammalian species and humans. It is known that coronaviruses can be rapidly mutated, change tissue tropism, pass through species barries and adapt to different epidemiological conditions (2). These viruses are zoonotic pathogens that can manifest with clinical features in a wide spectrum fromasymptomatic state to the need for intensive care (3). COVID-19 symptoms mainly including fever, cough and dyspnea are more severe in patients with comorbidities, while chronic obstructive pulmonary disease (COPD) is among the risk factors of COVID-19 (4). However, COVID-19 process is highly dynamic and new symptoms and complications are reported every passing day. Today, there is no drug or vaccination developed spesifically for COVID-19. In Turkey, early initiation of medical treatment with the existing malaria drugs has led to obtaining successful result in fight against the outberak.

In a recent study conducted in the Wuhan Infalmmatory Bowel Disease (IBD) Center about the measures taken to prevent spread of novel COVID-19 virus, An et al. reported that COVID-19 was not detected in 318 registered patients with IBD (5). Diarrhea was a rare presentation in the first series (3−5%) (6). However, clinicians has begun to question the prevalence of IBDs as a symptom of COVID-19 (7). In a study by Wei et al. in 84 patients with COVID-19 pneumonia, diarrhea was found in 31% of the patients (8).

In this report, we present a case of ulcerative colitis diagnosed following the treatment of COVID-19 pneumonia.

Case

A 50-year-old male patient presented to the the internal diseases outpatient clinic on April 16, 2020 with the complaints of fever and shortness of breath lasting for 3 days. In the physical examination; fever was 37.8°C, respiratory rate: 24/min, and heart rate: 105/min. There was no organomegaly in the patient. The patient was non-smoker.

In the first investigations, WBC was found as 6.4 10^9/L, CRP: 4.6 mg/L (0−5 mg/l) ferritin: 162 ng/mL (22−274 ng/ml) and D-dimer: 842 ng/mL, (0-630 ng/ml) and nasopharyngeal swab PCR test of the patient was negative. However, upon diffuse ground glass opacities compatible with viral pneumonia were obserbed on the chest CT, the patient was considered to have COVID-19 disease and 7-day therapy with hydroxychloroquine and azithromycin was initiated (Fig. 1).

In addition, PCR tests were positive in her wife and two children, pneumonia was confirmed with CT and the necessary treatment was started. The patient who was relieved clinically was taken to ambulatory follow-up. However, the patient was revisited the hospital due to bloody diarrhea, which began two weeks after the completion of COVOD-19 treatment. In stool examination, 10−12 erythrocytes and 5−6 leukocytes were found. Amoeba and Clostridium difficile toxins A + B were negative, while CBC and CRP were within the normal ranges. The patient was prescribed ciprofloxacin, metronidazole and probiotics and was followed-up. However, despite one-week treatment his complaints were not regressed and stool calprotectin level was reported as 1800 μg/g (0−50 ug/g).

In colonosccopic examination, there was a diffuse micro ulcerated granule appearance in the rectum and sigmoid colon, and submucosal vascularization was distorted (Fig. 2).

Biopsies were taken with the presumed diagnoses of infectious colitis and ulcerative colitis. In pathologiccal examination, there were mucin loss and distortion in the colonic glands, and PMNL and plasm cell infiltration were observed. Cryptitis and a crypt abscess were observed between the glands, while no granulomatous or a specific microorganism was detected. The patient was accepted to have ulcerative colitis triggered following COVID-19 and 5-aminosalicylic acid (5-ASA) therapy was initiated as oral and enema. Bloody diarrhea of the patient disappeared and his complaints were regressed three days after the initiation of this new drug therapy. Anti-SARS-CoV-2 antibodies of the patients were found as IgG positive and IgM weak positive. On the repeat control chest CT, a significant regression compared to the initial findings, sequela lesion were observed. Informed consent form was obtained from the patient for this case report.

Discussion

COVID-19 pneumonia is a widespread viral disease, which affects all the world and has been accepted as pandemic by the World Health Organization (WHO). It is possible to understand that first studies reported from China have focused only on respiratory symptoms associated with COVID-19 as the disease has caused respiratory failure and mortality in the first series. However, these publications have not highlighted diarrhea and the other gastrointestinal system complaints, which might led to underrecognition of these symptoms. The disease more commonly manifest with the upper respiratory tract (URT) and lower respiratory tract (LRT) complaints, there are studies reporting the involvement of other organs and diarrhea (9, 10). It has been shown that, COVID-19 RNA can be detected in the stool after respiratory samples become negative in some infected patients, and PCR test performed on the stool can give a positive result in these patients (11). However, today there are no data showing how long COVIS-19 viruse can remain viable in the stool.

In a case report of a 19-year-old non-smoker female patient reported from Italy, the patient presented to the hospital with fever, vomiting, bloody diarrhea and loss of taste and smell. PCR test was positive. CT did not show pneumonia, but contrast enhancement was detected in the ileum and colon of the patient. All symptoms disappeared following hydroxychloroquine therapy ad PCR test resulted negative. In the small bowel ultrasonography performed on the 16th day, thickness of the bowel walls and blood flow revascularization were increased in entire the colon. In the biopsy, ulcerations, crypt distortion and an active crypt abscess were observed. The patient in whom COVID-19 was negative in the stool samples was diagnosed with ulcerativ colitis (12).

Similarly, in our patient gastrointestinal system complaints were developed after the completion of COVID-19 treatment. To our knowledge, our case is the second case of COVID-19/ulcerative colitis in the literature following the patient reported from Italy. Despite PCR test of our patient was negative, clinical complaints of the patient and PCR (+) tests in all family member suggested COVID-19. Chest CT revealed ground glass opacities. In COVID-19, ground glass opacities with or without consolidation are reported as the most common tomographic findings (13). Complaints of the patient disappeared following treatment with hydroxychloroquine and azithromycin and a significant improvement was observed on repeat tomography.

Ulcerative colitis is an inflammatory bowel disease with unknown cause. Triggering of inflammation due to any reason may lead to the occurrence of the disease. In our patients, there was no GIS complaints previously, and development of bloody diarrhea and abdominal pain short time after the beginning of COVID-19, and colonoscopy and pathologic examinations compatible with ulcerative colitis suggest that the disease migh be triggered by COVID-19. Human intestines express high levels of angiotensin-converting enzyme-2 (ACE-2) and transmembrane serine protease that are needed for COVID-19 virus to gain antry into the cell. Emerging data suggest that GIS and liver may also be influenced by COVID-19 based on the hepatic cells expressing ACE-2, which is the major receptor of gastrointestinal epithelial cells and COVID-19 (14).

Although research on COVID-19 and IBD is known to be lacking, recently the International Organization for the Study of Inflammatory Bowel Disease (IOIBD) recommended reducing corticosteroids therapy and maintaining thiopurines and biologics (15).

So far most triage was made based on the presence of respiratory symptoms in COVID-19 cases. However, since the disease has a dynamic process and number of the publication reporting gasrtointestinal symptoms in addition to other symptoms is increasing, there is an urgent need to appropriately determine clinical features in COVID-19.

Our limitation in this case was lack of PCR investigations in the stool or tissue sample, but PCR test performed twice was already negative in our patient and positivity of IgG in the viral screening carried out following the treatment, clinical and CT findings of the patient were compatible with COVID-19, all family member had PCR (+) and full recovery was obtained following the treatment, suggesting that the patient experienced COVID-19.

Conclusion

We presented this case to state that COVID-19 can be seen with other organ pathologies in addition to URT and LRT complaints. We believe that ulcerative colitis in our patient was triggered by COVID-19. Patients presenting with gastrointestnal complaints should also be evaluated for COVID-19. Further studies are needed to investigate the association between COVID-19 and IBDs, especially ulcerative colitis.

Declarations

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Figures
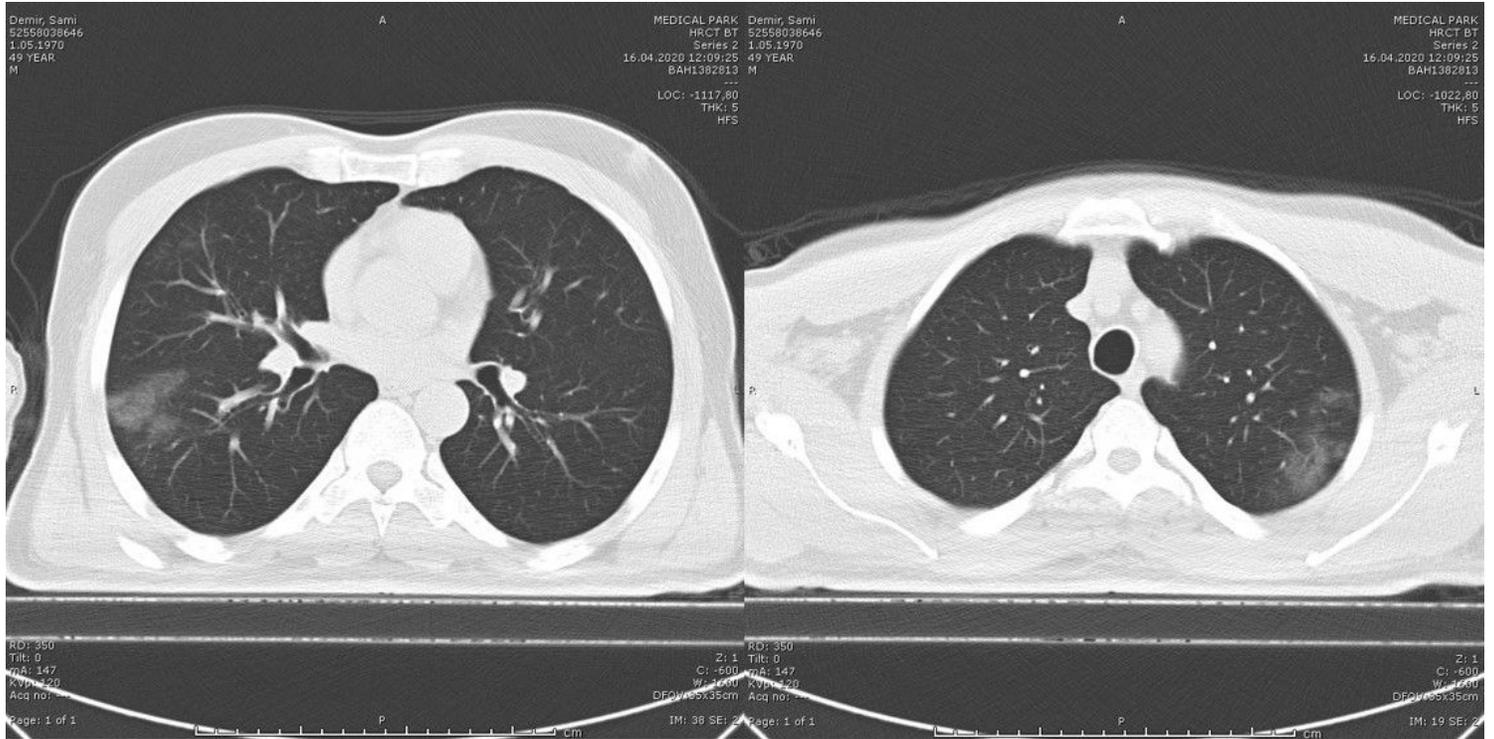
Figure 1

A, B. Initial chest computed tomography (CT) of the patient shows diffuse ground glass opacities (red arrows).

Figure 2

A: Microulcerated, granulated, bloody mucosa b, c: microulcerated, granulated mucosa on colonoscopic images. Submucosal vascular network can not be distinguished.