A Covid-19 Patient Presenting With Acute Hepatitis

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A 55-year-old male patient presented to our outpatient clinic with complaints of dark urine and fatigue. The laboratory parameters were as follows: alanine aminotransferase 821 IU/L, aspartate aminotransferase 1042 IU/L, alkaline phosphatase 412 IU/L gamma-glutamyl transferase 268 IU/L and the complete urinalysis revealed hematuria, while other laboratory parameters were normal. The patient's abdominal ultrasonography (USG) and doppler USG showed no pathological finding. Hepatitis and the other serologies were negative. The patient, who did not exhibit any symptoms of coronavirus disease 2019 (COVID-19) initially, exhibited bilateral opacities in the middle zones on chest X-ray taken after the development of fever and dyspnea on the 3rd day of hospitalization. The computed tomography scan revealed segmental consolidation across the subpleural regions, mostly in the middle zones, and was evaluated to be consistent with COVID-19. COVID-19 treatment was planned for the patient whose nasopharyngeal swab tested positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

Keywords: Acute Hepatitis, COVID-19, SARS-CoV-2
Short Title in English: Covid-19 Patient

Introduction

In December 2019, a novel coronavirus was considered the cause of a group of pneumonia cases in Wuhan, a city in Hubei Province, China. It spread rapidly and resulted in an epidemic across China, followed by a worldwide pandemic with almost 2 million confirmed cases (1). In February 2020, the World Health Organization (WHO) officially named the disease as "COVID-19", which stands for coronavirus disease 2019. The virus that caused COVID-19 was named as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Although severe COVID-19 disease can occur in healthy individuals of all ages, it has been observed to affect predominantly adults with advanced age or underlying diseases (2). By reporting this case, we aimed to emphasize that COVID-19 should also be included in the differential diagnosis of patients presenting with acute hepatitis during the pandemic.

Case Report

A 55-year-old male patient presented to our outpatient clinic with complaints of dark urine and fatigue for two days. He did not exhibit dry cough, dyspnea, elevated fever, sore throat, runny nose, headache, myalgia, disrupted sense of smell and taste, and diarrhea, which are the symptoms of COVID-19. Moreover, COVID-19 was not considered in the foreground as the patient did not report a history of traveling out of the city in the last 14 days and contact with anyone diagnosed with COVID-19. The patient's history revealed primary hypertension, diabetes mellitus (DM) type-2 and osteoporosis, and the medications used for these conditions as follows: nifedipine, calcium citrate, vitamin D, and metformin. A part from this, it was learned that he did not use any medicine or herbal product within the last week. His physical examination revealed no pathological findings, and his vital signs were as follows: pulse 70 bms, blood pressure 110/75 mmHg and body temperature 36.7 °C. Laboratory results were as follows: hemoglobin (Hgb) 13.5 g/dL (13.5-17.5 g/dL), white blood cell (WBC) 8100 cells/mcL (3,500-10,500 cells/mcL), platelet count 172,000 mcL (150,000-450,000/mcL), serum creatinine 1.1 mg/dL (0.6-1.2 mg/dL), blood urea nitrogen (BUN) 19 mg/dL (6-20 m/dL), sodium 135 mmol/L (136-146 mmol/L), potassium 4.3 mmol/L (3.5–5.1 mmol/L),

calcium 8.9 mg/dL (8.8-10.6 mg/dL), phosphorus 2.8 mg/dL (2.5–4.5 mg/dL), alanine aminotransferase (ALT) 821 IU/L (0-50 IU/L), aspartate aminotransferase (AST) 1042 IU/L (0-50 IU/L), alkaline phosphatase (ALP) 412 IU/L (40-150 IU/L), gamma-glutamyl transferase (GGT) 268 IU/L (9-64 IU/L), lactate dehydrogenase (LDH) 231 IU/L (0-248 IU/L), uric acid 6.0 mg/dL (3.5–7.2 mg/dL), total bilirubin 0.52 mg/dL (0.3-1.2 mg/dL), unconjugated bilirubin 0.49 mg/dL (0.0-0.8 mg/dL), conjugated bilirubin 0.03 mg/dL (0.0-0.2 mg/dL), international normalized ratio (INR) 1.02 (0.8-1.2), albumin 3.0 g/dL (3.5-5.2 g/dL), C-reactive protein (CRP) 7 mg/dL (5 -10 mg/dL), glucose 88 mg/dL and hematuria was detected in the complete urinalysis. Hepatitis A, B, C, E, human immunodeficiency virus (HIV), Cytomegalovirus (CMV), Epstein-Barr virus (EBV), Brucella melitensis and Toxoplasma gondii serology and blood culture were negative. Autoimmune markers studied to rule out autoimmune diseases of the liver were negative. The abdominal ultrasonography (USG) and doppler USG showed no pathological findings other than grade-1 hepatosteatosis in the liver. On the third day of hospitalization, the patient developed dyspnea and low saturation (SaO2 93%) with 38.7 °C fever. The posteroanterior chest X-ray revealed bilateral opacities in the middle zones, whereas the subsequent lung computed tomography (CT) revealed segmental consolidation scattered across the subpleural areas in the middle zones, which was evaluated to be consistent with COVID-19. The nasopharyngeal swab sample tested positive for SARS-CoV-2 as a result of reverse transcriptase-polymerase chain reaction (rRT-PCR) assay. The patient was given 200 mg of hydroxychloroquine for 5 days in accordance with the treatment protocol applied in Turkey. The post-treatment laboratory results of the patient with good general condition and stable vital signs were as follows: ALT 117 IU/L, AST 221 IU/L, ALP 171 IU/L, GGT 97 IU/L, total bilirubin 0.41 mg/dL, INR 0.9, albumin 3.7g/dL, CRP 3 mg/dL. The patient was discharged upon improved laboratory values and no pathological findings on vital signs and physical examination.

Discussion

The person-to-person transmission was confirmed with the rapid increase in the number of cases following the first reports of COVID-19 along with the emergence of the disease among healthcare workers (3). Although believed to be transmitted by droplets, recent cases have revealed evidence of transmission without any contact with infected individuals. It is considered that asymptomatic individuals may carry the virus in the airways and cause transmission, but transmission mainly occurs via contact with infected individuals. The clinical outcomes of COVID-19 can be mild and severe, with varying degrees or even clinical outcomes leading to death (4). To date, it remains unclear why some patients have developed severe symptoms. Recently, an article reported that COVID-19 had an effect on liver metabolism, but acute hepatitis occurs rarely after COVID-19. Various degrees of liver damage have been observed in COVID-19 patients (5). Recent studies have shown that COVID-19 patients exhibit elevated AST or ALT in case of severe liver damage, while the elevation of bilirubin is mild (6). Although the elevation of liver enzymes is mild to moderate in most cases, a case presenting with acute hepatitis before the development of respiratory symptoms was recently published (7). Furthermore, Weber et al. recently presented a case of severe hepatic impairment in a COVID-19 patient with a high model for end-stage liver disease (MELD) score who had no previous liver disease. However, there is currently insufficient data on cirrhosis and other complications in patients with COVID-19; therefore, there is a need for more research (8). Although the mechanism of liver damage associated with SARS-CoV-2 remains unclear, the possible cause of elevated liver enzymes may be the

direct effect of the virus on the liver with the angiotensin-converting enzyme 2 (ACE2) receptors (9). Previous studies have shown that ACE2 receptors are expressed in both bile duct cells and liver cells, but the concentration of ACE2 receptors in hepatocytes is much lower, indicating that liver damage may be due to the damage of cholangiocytes (10). However, histopathological liver findings of COVID-19 patients did not exhibit any significant hepatocyte and cholangiocyte damage as cholestatic liver enzymes do not usually increase in COVID-19 patients with liver damage (11). Liver damage in COVID-19 patients may be caused by a hyperactive immune response and cytokine storm or systemic inflammation due to drug hepatotoxicity. Therefore, close patient follow-up and monitoring of liver functions are required (12).

In conclusion, our patient's fever and dyspnea improved within a few days without any specific treatment, and the liver function parameters were found to decrease significantly on the 5th day following the diagnosis of COVID-19. Acute hepatitis appears quite rarely, considering that a new symptom and clinical condition are associated with COVID-19 every day. Elevated liver function parameters in individuals without significant COVID-19 symptoms should be regarded as an indicator of COVID-19.

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