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Recurrent COVID-19 Pneumonia in Chronic Lymphocytic Leukemia Patient

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Abstract

The coronavirus disease 2019 (COVID-19) emerged in December 2019 and has rapidly spread worldwide. The overall mortality rate differs between regions, countries, and different patients risk factors. With many infections, immune compromised patients often present with signs and symptoms that are atypical. Herein we report a case of a SARS-CoV-19 infection in a patient with chronic lymphocytic leukemia (CLL) and describe the clinical course, diagnosis, and management of the case. The initial presenting clinical symptoms were dyspnea and cough, followed by sore throat and headache and progression to pneumonia. He was admitted once more with dry cough and fever, without dyspnea after 42 days and treated with 400 mg/kg body weight intravenous immunoglobulin (IVIg) single dose. This case highlights the importance of COVID-19 infection in immune compromised patients which would be considered in the presence of different presentation and screening procedures. In conclusion, the differential diagnosis of COVID-19 should be pursued when investigating in CLL patient with signs and symptoms of pneumonia.

Keywords: COVID-19; Pneumonia; Chronic lymphocytic leukemia

Introduction

The coronavirus disease 2019 (COVID-19) emerged in December 2019 has spread rapidly throughout many countries [1,2]. The overall mortality rate is at present difficult to estimate due to uncertainty in the testing strategies of the different countries and the rapidly changing disease dynamics

[1-4]. Clinical presentation varies widely from a mild common cold-like illness, to a severe viral pneumonia leading to acute respiratory distress syndrome that is often fatal [4,5]. Patients with cancer are more susceptible to infection, due to their systemic immunosuppressive state caused by the malignancy and anticancer treatments [6,7]. Unfortunately, there is at present no proven effective therapy or vaccine for the treatment of human coronavirus infections. Computed tomography (CT) scan has emerged as an important imaging modality assisting in the diagnosis and management of patients with Covid-19 [7-11]. A previous study reported that 18 out of 1590 COVID-19 patients from 575 hospitals in 31 provincial regions in China had a history of cancer [6]. The clinical data on the presentation in immune compromised patients with COVID-19 is scarce. Furthermore, information on the effect of the anti-rejection immunosuppressive regimens on the clinical course of COVID-19 infection is lacking. Therefore, in the present study we report the recurrent COVID-19 pneumonia in CLL patient with clinical presentations and successful outcome.

Case Report

On February 26, 2020, a 66 years old man presented to the Department of Infectious Diseases, in Omid hospital, Isfahan, Iran, with a 3 days history of dyspnea and cough, this was followed by sore throat and headache that started 2nd day prior to presentation. He stated no other symptoms, nor had a history of travels or contact with known or suspected COVID-19 persons. The physical examination revealed a body temperature of 37°C, blood pressure of 85/50 mm Hg, pulse of 112 beats per minute, respiratory rate of 22 breaths per minute, and oxygen saturation of 88% while the patient was breathing ambient air. The patient had been diagnosed with CLL in June 2011, for which he had received several different chemotherapeutic regimens including chlorambcil, rituximab

for 6 consecutive weeks in addition to cyclophosphamide and prednisolone. His previous medical history included cytomegalovirus (CMV) retinitis and pneumonitis in November 2019 treated with ganciclovir and withdrawal of cyclophosphamide, which resulted in resolution of the CMV retinitis and a negative CMV viral load. He was continued on prednisolone 5 mg BD. On admission supplemental oxygen, delivered by nasal cannula at 4 liters per minute was administered. The patient was found to have dry mucous membranes. Lung auscultation revealed rhonchi and examination of his heart revealed no murmurs, rubs or gallops. The neurological examination and abdominal examination were unremarkable, Chest radiography was reported as showing suspicious ground glass opacity in right cardiophrenic angle. The patient was administered imipenem 500 mg every 6 hours, azithromycin 500 mg on first day, followed by 250 mg daily and linezolid 600 mg every 12 hours. The patient was rehydrated with approximately 2 liters of normal saline over the first 2 days of hospitalization. The first 7 days were notable for a persistent leukopenia, anemia, and thrombocytopenia. Chest computed tomography (CT) was performed, which was reported as showing multiple subpleural ground-glass opacities (GGO) in both lungs. The patient's nasopharyngeal and oropharyngeal swabs were obtained and a nucleic acid amplification test for influenza A and B, was negative. Two days after admission real-time reverse transcriptase polymerase chain reaction (rRT-PCR) assay for SARS CoV-19 was positive. The local protocol for COVID-19 was activated, with patient hospitalization, isolation and treatment with hydroxychloroquine sulfate 400 mg BID for 24 h, afterwards 200 mg BID; oral, lopinavir/ritonavir 400 mg/100 mg and ribavirin 1200 mg every 12 hours was initiated. On hospital day 5, the patient's clinical condition improved. Supplemental oxygen was discontinued, and his oxygen saturation values improved to 94% to 96% while he was breathing ambient air. The patient's symptoms improved, and he was discharged home on March 1, 2020. The patient was followed up as an out-patient until March 15, 2020 and a repeated chest CT was performed, which was reported as showing subtle GGO in right lower lobe. Nasopharyngeal and oropharyngeal swabs specimen were negative for SARS CoV-19 on day 15. In April 8, 2020 he was admitted once more with dry cough and fever, without dyspnea. The physical examination revealed a body temperature of 38.5°C, blood pressure of 95/60 mm Hg, pulse of 110 beats per minute, respiratory rate of 20 breaths per minute, and oxygen saturation of 97% while the patient was breathing ambient air. Laboratory analysis revealed first 3 days with leukocytosis, anemia, and thrombocytopenia. Lung auscultation revealed crackle sound in right. CT was performed, which was reported as showing bilateral base lungs pneumonia with pleural effusion. The patient was administered imipenem 500 mg every 6 hours and linezolid 600 mg every 12 hours. Nasopharyngeal and oropharyngeal swabs specimen were positive for SARS CoV-19. The patient treated with 400 mg/kg body weight intravenous immunoglobulin (IVIG) single dose. On hospital day 4, the patient's clinical condition improved, and his fever was discontinued. Blood culture was negative. Nasopharyngeal and oropharyngeal swabs was performed, and SARS CoV-19 was

reported back as negative on April 13, 2020. The patient's symptoms improved, and he was discharged home. The patient was followed up as an out-patient after two weeks with two continuous negatives of nucleic acid tests weekly.

Discussion

Pneumonia caused by COVID-19 is associated with significant morbidity and mortality in different patients [1,2]. Here, we report the successful recovery of the recurrent COVID-19 pneumonia with underlying CLL. The clinical presentation of patients with COVID-19 pneumonia is diverse to previously reported infected patients in terms of symptoms, laboratory, and radiological abnormalities. Initially, our patient presented with symptoms of dyspnea and cough, followed by sore throat and headache without fever, myalgia, or gastrointestinal symptoms. A chest x-ray showed suspicious ground glass opacity in right cardiophrenic angle. He was admitted once more with dry cough and fever, without dyspnea after 42 days. This differs from other reports of cases, where pneumonia seems to be the most common serious manifestation of infection [4]. Infection with COVID-19 presents often primarily with fever and cough, and it is often accompanied by dyspnea, bilateral and unilateral infiltrates on chest imaging [4-7]. This could be related to the fact that patients had a normal total lymphocyte count, and that the severity of the disease has been associated with lymphopenia [5]. This is the first case report of recurrent COVID-19 infection in CLL patient from Iran, while a few case reports are reported from different regions due to immune compromised cancer patients [6]. The immune response of patients is significantly suppressed due to use of immunosuppressive agents. Therefore, clinical manifestations of COVID-19 infection in this population may be distinctive and that treatment methods for COVID-19 pneumonia require careful consideration. More experience needs to be gathered to improve the treatment guideline for CLL patients with COVID-19. In immune compromised patients, COVID-19 infection would be considered in the presence of different presentation and screening procedures. Consequently, high risk patients need more careful care.

Conclusion

In conclusion, the differential diagnosis of COVID-19 should be pursued when investigating in CLL patient with signs and symptoms of pneumonia which may present with different clinical manifestations.

Authors' Contributions

EN, HF, and HM designed and implemented the research. Together with SS, AV, BA and HF, results were analyzed, and the manuscript was written. All authors read and approved the final manuscript.

Disclosure of Interest

The authors declare that they have no competing interest.

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