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Letter to the Editor

SARS-CoV-2 infection in an advanced rheumatoid arthritis patient

Dear Editor,

In late 2019, pneumonia due to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in Wuhan, China, which has immediately spread around the world. The major clinical manifestations of COVID-19 include a range from asymptomatic presentation to acute respiratory distress syndrome (ARDS) (1). Rheumatoid arthritis (RA) patients usually manage with immunosuppressive agents; hence, they are at a higher risk of infections (2). However, limited data are available about the severe case of COVID-19 in RA patients (3–7). Here, we present a complicated case of SARS-CoV-2 infection in a female RA patient.

CASE PRESENTATION

The patient was a 49-year-old woman with a history of 15 years of RA. She has received conventional treatments (first-line treatments) such as conventional disease-modifying antirheumatic drug (csDMARD) medication (Ebetrex (methotrexate) 15 mg/week on Thursdays and Fridays; sulfasalazine 1000 mg/day; Ipravent 20 mg; vitamin D–calcium (1 tab/day); and corticosteroids (Nisopred 5 mg/day)).

She was admitted to the hospital (Valiye Asr Hospital, Fasa, Iran) on March 11, 2020, with a dry cough, fever, myalgia, respiratory distress, dizziness, and nausea. Though O_2 saturation (SPO_2%) was low (64%) on admission, the O_2 nebulizer was administered (O_2 5 L/min), which resulted in the correction of O_2 saturation (87%). Four days before admission, she had only dry cough without other symptoms. She declared no sign of reduced smell and taste senses. Before admission, she had a history of contact with her two daughters, her husband, and 1-year-old grandchildren, in that all of them were positive for COVID-19 by real-time PCR test. She was the only member of her family with severe respiratory problems that needed to be hospitalized (and also the only person with RA in her family), while the rest of the family showed mild symptoms and quarantined at home. The chest X-rays on the first day of hospitalization showed signs of pneumonia alongside with bilateral ground-glass pattern, vascular dilation, and traction bronchiectasis in the middle and secondary lobes (Fig. 1). Positive real-time PCR tests confirmed the SARS-CoV-2 infection. Laboratory findings on admission were a very low WBC count and reduced number of platelets, elevated ESR, and PT.

Therapy with hydroxychloroquine was started on the first day and continued for 10 days. Oseltamivir was added on the second day and continued for 6 days. The patient's nausea was controlled by ranitidine, ondansetron, and pantoprazole. Kaletra (lopinavir/ritonavir 200–50 mg/day and night 2 tab each) was added to the antiviral regimen on the fourth day, and continued as the main antiviral medication for 7 days until symptoms were relieved. A cluster of antibiotics was prescribed for the first week because of low WBC count and suppressed immunity to prevent secondary infection. In the following, she was treated with a period of levofloxacin medication in home quarantine (day 14 till 27). Theophylline G and O_2 nebulizer treatment helped to support the airway and reduce the respiratory symptoms. As laboratory findings and symptoms demonstrate, the patient's condition was worsened at the end of first week. The WBC and RBC counts were reduced. Chest CT scans at the second week revealed the destructive effects of inflammation (Fig. 1). As the laboratory findings and symptoms were more similar to the COVID-19 cytopenia, we decided to redesign the treatment. So, the DMARDs and immunosuppressant treatment were omitted. We then discontinued the Ebetrex and Nisopred at the second week by dose reduction, only Sulfasalazine was continued. This strategy led to increased WBC count and altered hematologic factors (Table S1). By reducing the symptoms, the patient was discharged with a stable condition and quarantined for 14 days at home. Her real-time PCR was negative on day 27. The last chest CT scans and X-rays showed a significant reduction in GGO pattern on day 35 (Fig. 1).

Immunosuppressive medication in RA patients (e.g., csDMARDs and corticosteroids) in the course of SARS-CoV-2 infection may be as a double-edged sword (8). Managing the RA disease with the lowest possible dose of csDMARDs besides treatment of SARS-CoV-2 could be an effective strategy for treatment of COVID-19 in RA patients. The results of this case have shown that a gradual reduction in

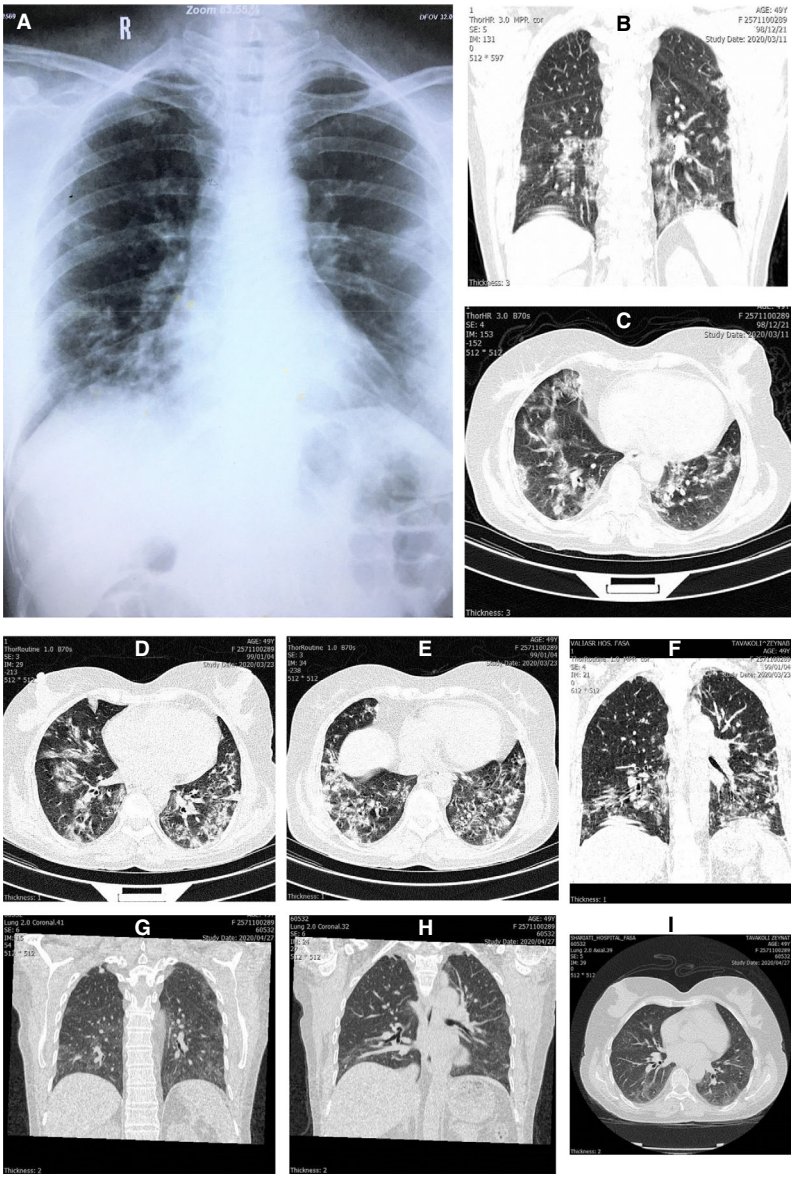

Fig. 1. (A) Chest X-rays on day of hospitalization showed transparency and bilateral lung involvement in the middle and secondary lobes. (B) (Chest x-ray; coronal section) and (C) (CT scan; axial section) on day of hospitalization showed transparency GGO and bilateral lung involvement in the middle and lower lobes. (D and E) (CT scans), and (F) (chest X-ray) at day 14 showed worsening and increased symptoms of lung involvement, GGO, consolidation, and visible intralobular lines (crazy paving pattern). (G and H) (chest X-ray), and (I) (CT scans) on day 35 showed a significant reduction in GGO.

immunosuppressive drugs could help to decline the disease severity.

The authors sincerely appreciate doctors, nurses, and laboratory personnel of Jahrom and Fasa Universities of Medical Sciences for their tireless efforts in this crisis. We also thank the patient for her participation.

CONFLICTS OF INTEREST

The authors declare no competing interests.

AUTHOR CONTRIBUTIONS

AB, MAB, and AA designed the study. AB and MAB wrote the draft of the manuscript. AB and

FF collected data and performed analyses. RR, FF, and AA supervised the study. AA revised the manuscript for submission.

ETHICAL APPROVAL

Informed consent was obtained from the participant for the publication of this case report. The study was approved by the Ethics Committee of Jahrom University of Medical Sciences, Jahrom, Iran (Approval ID: IR.JUMS.REC.1399.043).

DATA AVAILABILITY STATEMENT

All datasets generated for this study are available.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Table S1. Patient laboratory test results during hospitalization days.