A case report on a severely ill COVID-19 patient with rapid clearing of chest infiltrates 43 hours after treatment with multiple modalities

Deepanjali Radhakrishnan Nair, Jack W. Coggeshall and Melissa L. Scalise

Department of Internal Medicine, University of Tennessee, Nashville, TN, USA

ABSTRACT

A 44-year-old COVID-19 positive patient was transferred to our hospital with worsening acute hypoxemic respiratory failure. She was admitted to ICU and was started on high flow oxygen. Her CXR showed worsening bilateral infiltrates. In order to prevent her progression from severe to critical disease, we adopted a multiple modality treatment approach, utilizing clinical judgment and most recent publications. She was treated with antibiotics, convalescent plasma, steroids, hydroxychloroquine and self-proning. After 43 hours, her CXR showed rapid clearing of infiltrates and we could discharge her on day three of hospitalization. Previously reported case series on convalescent plasma showed the number of days taken for significant improvement in chest x-ray varied from 4 to 7 days. The rapidity of improvement in this patient is remarkable and could be due to the multiple modality treatment approach.

On arrival, the patient was found to be in significant respiratory distress. On physical examination, she had bilateral crackles. Abnormal lab findings included a CRP of 12.9 mg/dl and a hemoglobin of 8.4 g/dl with a ferritin elevated to 320 ng/dl. There was no lymphopenia or thrombocytopenia. Comprehensive metabolic panel was unremarkable. Troponin was 0.0 ng/ml. INR and PTT were within normal limits; D-dimer was <200 ng/dl. Her chest x-ray showed interval worsening of bilateral chest infiltrates (Figure 1).

Due to her respiratory distress and worsening chest x-ray, she was admitted to the ICU and was started on high-flow oxygen. We adopted a multiple modality treatment approach, utilizing clinical judgment and most recent publications. It was initially decided to treat with antibiotics, convalescent plasma, steroids, self-proning and remdesivir. Due to the unavailability of remdesivir, hydroxychloroquine 400 mg twice daily was used instead. Methylprednisolone was given at a dose of 60 mg daily. She received ceftriaxone 1 gm daily to treat potential bacterial pneumonia. Convalescent plasma was given on the day of transfer. The patient also performed self-pronation for 1 hour four times a day.

On day 2 after transfer, the patient reported that she felt better and that her sense of smell and taste were slowly returning. She requested discontinuation of hydroxychloroquine after receiving a total of two doses due to concerns about the cardiac side effects of the drug. The rest of the above medications were continued. On day 3 after transfer, she reported significant improvement in her symptoms. She was not requiring oxygen, and her anosmia and ageusia had resolved. Repeat chest x-ray showed significant improvement in bilateral infiltrates 43 hours after the initial chest x-ray was performed (Figure 2).

She was discharged home on the third day after transfer. Patient was advised to self-quarantine and was discharged on no medications. Her chest x-ray 2 weeks after discharge showed complete resolution of infiltrates.

1. Discussion

The spectrum of COVID-19 is divided into mild, severe and critical disease [1]. Mild disease includes both mild or no pneumonia with severe disease occurring when patients meet certain criteria including: respiratory frequency ≥30/min, dyspnea, hypoxia and/or lung infiltrates encompassing >50% of lung parenchyma [1]. Critical disease includes patients who suffer from shock, severe respiratory failure or multiorgan dysfunction [1]. According to studies, the occurrence of critical disease in hospitalized individuals is high as is the mortality among ventilated patients [2,3]. The patient described had severe disease on presentation, and currently, there are limited data regarding what treatment modalities are effective. The rationale for using multiple modalities in this patient was to prevent progression from severe to critical disease.

Several case series have reported improvement in clinical status of COVID-19 patients with severe and critical illness after infusion of convalescent plasma, so
this treatment was included [4–7]. Remdesivir was not available, and hydroxychloroquine was instead given. At the time of treatment, hydroxychloroquine was felt to provide possible benefit to patients due to in vitro antiviral activity [8]. However, studies are now published that do not demonstrate mortality benefit or lower intubation rates in patients treated with hydroxychloroquine [9,10]. Based on recently published data, the authors do not advocate the use of hydroxychloroquine. Self-proning was undertaken as a case series and a preliminary study has shown improvements in oxygenation in patients with COVID-19 [11,12]. She received ceftriaxone empirically for bacterial pneumonia coverage based on clinical judgment. There are mixed data on the efficacy of corticosteroids in cases of COVID-19. A retrospective cohort study suggested that corticosteroids may be helpful in COVID-19 patients with ARDS while another study shows that they may delay viral clearance [13,14]. We decided to use steroids in this patient in an attempt to prevent her disease progression, especially in the setting of elevated inflammatory markers.

Previously reported case series on convalescent plasma showed the number of days taken for significant improvement in chest x-ray varied from 4 to 7 days [5–7]. Our patient showed significant improvement in her chest x-ray within 43 hours with early successful discharge to home. While young age and lack of comorbidities were protective factors, the rapidity of improvement is remarkable and could be due to the multiple modality treatment approach. Clinical trials on different treatment modalities and combination therapies are underway and hopefully, will shed more light.
on the most effective treatments for patients with severe COVID-19 in the future.

**Disclosure statement**

No potential conflict of interest was reported by the authors.

**ORCID**

Melissa L. Scalise [http://orcid.org/0000-0002-2609-1196](http://orcid.org/0000-0002-2609-1196)

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