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Case Report

Successful treatment with convalescent plasma in Covid-19 disease in relaps/refractory multiple myeloma

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Abstract

The Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus detected in the Wuhan Province of the People's Republic of China caused a pandemic in a very short time all over the world.

Convalescent plasma (CP) therapy is a passive antibody therapy that has been shown to be effective in epidemic periods. CP therapy has been of interest in the treatment of infection with no vaccine or specific treatment, such as the Sars-CoV-2 infection that causes COVID-19.

We aimed to report our CP experience in Sars-Cov-2 infection in our relapsed / refractory Multiple myeloma (MM) patient.

Keywords: Comorbidity; Convalescent plasma; immunocompromised patient; multiple myeloma; SARS-CoV-2 infection

INTRODUCTION

COVID-19 disease has caused a serious health problem all over the world since December 2019. The clinical spectrum caused by the virus is quite wide, from asymptomatic infection to pneumonia, from disseminated intravascular coagulation to macrophage activation syndrome.

Multiple myeloma (MM) is a plasma cell disease that causes suppression in the immune system. Cancer patients and solid organ recipients may be at higher risk for more severe COVID-19 disease (1). It has a similar incidence of COVID-19 in hospitalized persons with hematological malignancies compared to the normal population, but has more severe disease and a higher case fatality rate (2).

Mortality rates in patients diagnosed with COVID-19 and MM have been reported between 19-57% (3).

Advanced age, presence of comorbidity are negative factors for the severe course of COVID-19 disease (4). Lymphopenia, thrombocytopenia, uremia, increased LDH, transaminase levels, d-dimer, CRP, ferritin, neurophil/ lymphocyte ratio and IL-6 have been reported as laboratory markers that determine the severity of the disease in COVID-19 patients (5).

Convalescent plasma (CP) therapy is an effective and safe treatment that has been used in the treatment of various infections for more than 100 years (6).

Here, we aimed to report the effective treatment of COVID-19 pneumonia in our patient with MM with tocilizumab, intravenous immunoglobulin and CP.

CASE REPORT

A 57-year-old male patient received 4 cycles of vincristine-dexamethasone chemotherapy after 2 cycles of vincristine-adriamycin-dexamethasone with the diagnosis of IgA kappa type MM in 2015. The patient, who underwent autologous hematopoietic stem cell transplantation (HSCT) in December 2015, was followed up with 10 mg lenalidomide maintenance after HSCT.

In April 2020, due to anemia, thrombocytopenia and a significant increase in serum IgA levels, pomalidomide dexamethasone combination therapy was started. MM progression was detected 2 months later; the treatment of the patient was revised as carfilzomib dexamethasone. The patient with progression was scheduled for daratumumab-lenalidomide-dexamethasone treatment with the diagnosis of relapse / refractory MM 2 months later.

When the patient who was hospitalized in the hematology service with a diagnosis of recurrent MM, the first COVID-PCR test taken due to a cough complaint for about 3 days was negative, symptomatic treatment and meropenem 3 g / day i.v. has begun. The second PCR test performed in the patient whose symptoms did not regress during follow-

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up was found to be positive. The patient was transferred to the COVID service. The patient, whose treatment was started with favipravir, failed to obtain clinical response, and CP (on day 5 of COVID-19 diagnosis), tocilizumab, and intravenous ımmune globulin treatments were administered, respectively. CP was given at 200 cc in 15 minutes. There were no complications. IgA deficiency was not detected in the patient whose IgA level was checked before CP was given. Inflammatory markers of the patient regressed during follow-up. Infiltrations on PA-AC and thorax CT regressed. Figures 1 (before) and 2 (after) show radiological imaging before and after treatment. Control COVID-PCR test was negative. The patient with a diagnosis of relapsed / refractory MM was taken over to the hematology service. Daratumumab-lenalidomide-dexamethasone treatment was applied. The patient was discharged with recommendations.

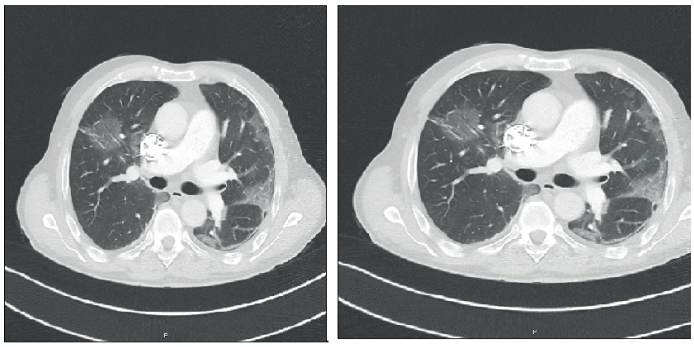

Figure 1. Before CP

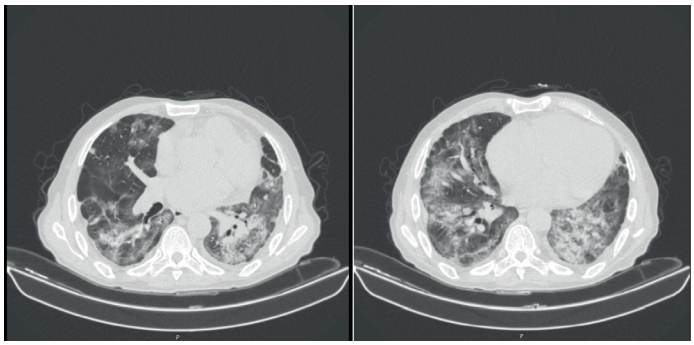

Figure 2. 10 days after CP administration

DISCUSSION

Remdesivir, favipiravir, CP, tocilizumab, dexamethasone have been reported among the treatment modalities that have been reported to be effective in the treatment of COVID-19 to date (7,8). It is thought that CP treatment obtained from individuals recovering from COVID-19 can provide immunity via passive antibodies. CP containing high neutralizing antibody titers have been reported to be beneficial when given in the early phase of COVID-19 disease. It has shown the benefits of using CP in the early period especially in COVID-19 infection in immunocompetent patients (9).

Alsharidah S et al reported a significant decrease in mortality in patients who received CP in the first 24 hours of hospitalization in a prospective observational study in which they examined a total of 368 COVID-19 patients (10). Accordingly, ah Yoon H. et al. reported a 4-fold reduction in mortality in patients under 65 years of age who used CP within the first 72 hours of hospitalization for the treatment of serious COVID-19 patients (11). Libster R et al. They evaluated a randomized, placebo-controlled, double-blind 160 COVID-19 patients. They reported that the use of CP containing high amounts of antibodies against Sars-cov-2 in the first 72 hours prevented progression (12).

Jamir I et al reported that the patient, who had a solid organ transplant and had a severe COVID-19 infection, was successfully treated with CP and remdesivir (13). London J et al reported dramatic improvement with CP in 2 severe COVID-19 patients with lymphopenia (14). Libster R et al reported that high antibody CP was an effective and safe treatment modality even in the elderly. It was reported that CP should be given within the first 72 hours of symptom onset (12). Ahmad A et al a meta-analysis reported on 17 studies, 5 of which were randomized. It was reported that the mortality rates of patients who received CP were significantly lower than those who did not (15). Data on the use of CP in the treatment of hematological cancer patients with COVID-19 infection is very limited. However, it has been reported that it is an effective and safe treatment in very few cases used. In fact, CP can be used as a safer treatment in cases with comorbidities such as kidney failure and in which not every drug can be used, such as our case(9,13).

Hueso T et al reported improvement in inflammatory markers and fever with early use of CP in B-cell – depleted patients (16). Moore, J. L. et al. reported successful treatment with CP therapy in a 63-year-old non-Hodgkin lymphoma patient (17). Again, Baang, J. H. et al. reported successful treatment with remdesivir and CP in a 66-year-old patient with refractory mantle cell lymphoma (18). Luetkens T. et al. reported SARS-CoV-2 clearance with CP treatment in severely immunosuppressed MM and COVID-19 patients (19).

Van Damme KF et al reported a 37-year-old patient with male with common variable immunodeficiency disorder and a severe SARS-CoV-2 infection. After the administration of CP, the patient's condition was reported to improve rapidly. They suggested that CP could be an effective treatment option in CVID and severe COVID-19 patients (20).

Senefeld et al reported 18 peer-reviewed reports of 54 patients with hematological malignancies. In the largest cohort - 17 patients with secondary immunodeficiency due to treatments for lymphoma or leukemia who experienced severe COVID-19 symptoms - they found that the majority showed "improved clinical status and viral clearance" within 48 hours of administering CP. Another group of 14 patients who received the treatment reported an improvement in symptoms such as shortness of breath,

fever and cough, and a reduction in oxygen demand (9). As a result of Senefeld's study, it was concluded that the use of CP for immunodeficient patients with COVID-19 is really beneficial.

Other drugs used in combination with CP may also have had an effect on the improvement in the patient's clinical condition. CP can be used as an adjunct to treatment in such patients where there is no standard treatment and the mortality rate is high due to the underlying disease.

CONCLUSION

CP was shown to be effective and safe in COVID-19 disease in our relapsed / refractory MM patient. It is a safe and effective option of CP in immunocompromised patients.

Conflict of interest: The authors declare that they have no competing interest.

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