Convalescent plasma as a therapeutic modality in hematological patients with COVID19 pneumonia - a review of the results of patients treated in University Hospital Dubrava

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During the COVID19 pandemic, University Hospital Dubrava treated, among others, hematological patients with COVID19 disease. Large proportion of hematological patients have overt secondary immunodeficiency mainly due to treatments that also target cells that are the base of humoral and cellular response. In COVID-19 it is manifested by diminished specific immunological response and prolonged disease course. Passive immunization with convalescent plasma in these setting may be helpful.

Patients

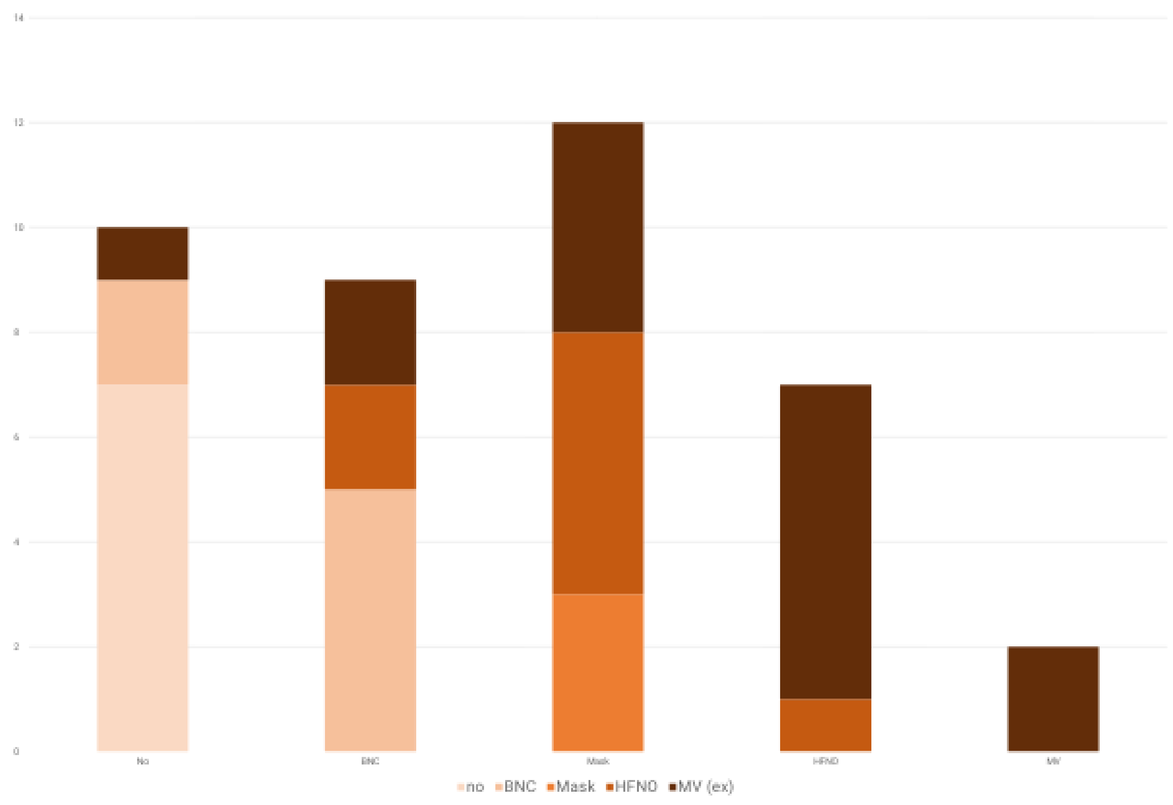
Total of 40 patients (24 men, 16 women) received convalescent plasma (rFFP) as part of treatment. The mean age at hospitalization was 65 years (age range 28–88 years). The median time from the onset of symptoms or the first positive test to hospitalization is 11.5 days. The most common hematological disease was chronic lymphocytic leukemia (13 patients, 32.5%), followed by follicular lymphoma (5), mantle cell lymphoma (3), multiple myeloma (3), and acute myeloid leukemia (2). Thirty patients (75%) had a history of treatment for the underlying hematological disease, and 23 patients were currently being treated, of whom 11 were receiving rituximab. All patients were admitted for bilateral pneumonia.

On admission, IgG antibodies to SARS-CoV-2 were tested in 34 patients, of whom only two had a positive result. Positive serum PCR SARS-CoV-2 was found in 15 patients (37.5%). The same results were found on the day of the first rFFP administration. The median number of rFFPs administered is 4 (range 1 -15), mostly 18.5 days after the onset of symptoms, or on day 4 of hospitalization. The majority of patients (30, 75%) were treated with oxygen therapy at the first dose of rFFP; 7 patients were treated with high-flow oxygen therapy and two were mechanically ventilated. The patients were also treated with low molecular weight heparin (94%), corticosteroids (92%), remdesivir (62,5%), antibiotics (78%) and intravenous immunoglobulins (54%).

Results

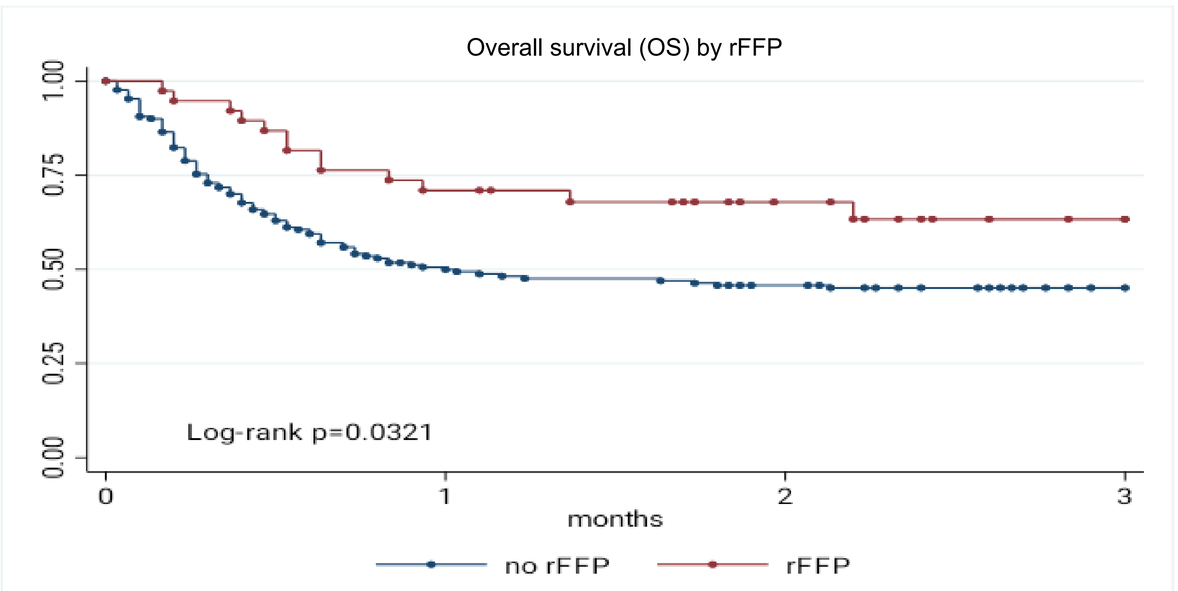
Sixteen patients (40%) died, and hospitalization lasted an average of 26 days. Median time from administration of first dose of rFFP to hospital discharge was 12,5 days. Only one patient who was respiratory sufficient at the time of rFFP administration died. In-hospital mortality was higher in patients who required higher oxygen flows at the time of first rFFP administration – 1/3 of patients who were receiving oxygen by binasal cannula (1 -6 L/min) and 1/3 of patients who were receiving oxygen my mask (6 – 16L/min) died. All patients who were at the time of the rFFP administration mechanically ventilated (MV) died, as well as 6 out of 7 (85,7%) patients who were treated with high flow nasal oxygenotherapy (HFOT). After rFFP administration, 23 patients had disease progression; six of them survived. For 8 patients, the maximum oxygen therapy was HFOT, and all 16 patients who were mechanically ventilated eventually died.

Control IgG SARS-CoV-2 were tested in 25 patients, of which 19 (76%) had positive antibodies; one ultimately died, and other patients were discharged. At the time of control most patients (19) were independent of oxgyenotherapy. Only ten patients continuted outpatient controls, of which 7 (70%) patients still had antibiodies. All of them are respiratory sufficient.



A total of 171 hematological patients treated at UH Dubrava did not receive rFFP. They were significantly older (72 vs. 68 years, p <0,05) and had more comorbidities (Charlson Comorbidity score 6 vs. 5, p <0,05). There was no significant difference based on sex and MEWS score. During the hospitalization 29.8% required HFOT, 25% mechanical ventilation, which survived only 3 patients. A total of 52% of patients survived.

Hematological patients who received rSSP had better OS than patients who did not receive it.



Conclusion

In conclusion, passive immunization with rFFP may help control COVID-19 infection until patient's own immunological system recovers from consequences of previous immunosuppressive treatments. rFFP has potential significance in patients not yet dependent on higher oxygen flows, whereas in patients on HFOT and mechanical ventilation this role is unlikely to be significant.

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