Clinical Characteristics and Outcomes of Patients with COVID-19 treated with Convalescent Plasma in Miami, Florida

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Background

- The Coronavirus disease of 2019 (COVID-19) global health crisis has resulted in unprecedented mortality, impacted society, and strained healthcare systems
- Many prophylactic and therapeutic interventions are under investigation, however sufficient data is lacking
- Convalescent plasma, used since 1892 for infectious disease outbreaks, offers promise as a treatment option for COVID-19

Methods

- This is a retrospective cohort study of adult patients who tested positive for SARS-CoV-2 with a nasopharyngeal swab RT-PCR and who received COVID-19 convalescent plasma (CCP), between April 1st, 2020 and August 1st, 2020, at two large hospitals in Miami-Dade County - Jackson Memorial Hospital and University of Miami Hospital
- Patients received CCP through the Expanded Access Program for COVID-19 convalescent plasma (CCP)
- Immunocompetent and immunocompromised patients were included
- Descriptive data and outcomes were collected and analyzed

Table 1. COVID-19 Positive Patient characteristics and clinical presentation

Variable	All Patients n = 95 (%)*
Demographics	
Age, median (range)	62 (20-92)
Gender, male	56 (59%)
Ethnicity, Hispanic	61 (64%)
Comorbidities	
Hypertension	64 (67.3%)
Diabetes Mellitus	36 (37.8%)
Overweight (BMI >25)	71 (74.7%)
Immunocompromised	42 (44.2%)
Exposure	
Community	80 (84.2%)
Nosocomial	7 (7.3%)
Cruise ship	2 (2.1%)
Nursing home	4 (4.2%)
Healthcare worker	2 (2.1%)
Symptoms at admission	
Fever	60 (61.8%)
Cough	59 (62.1%)
Dyspnea	67 (70.5%)
Fatigue	42 (44.2%)
Days of symptoms on presentation, median (range)	4(1-21)
Radiographic findings	
Abnormal chest x-ray on admission	78 (82.1%)
WHO ordinal clinical severity score	
Admission	
2: Activity limitation, not on oxygen	2 (2.1%)
3: Hospitalized, no oxygen therapy	34 (35.7%)
4: Oxygen by mask or nasal prongs	28 (29.4%)
5: Non-invasive ventilation or high flow mask	20 (21%)
6: Intubation and mechanical ventilation	6 (6.3%)
7: Ventilation + additional organ support (vasopressors, RRT, ECMO)	5 (5.2%)

Table.2 Treatment and Outcomes

Variable	All Patients n = 95 (%)*
Investigational treatment given	
Hydroxychloroquine	13 (13.6%)
Tocilizumab	17 (17.8%)
Remdesivir	61 (64.2%)
Methylprednisolone IV	45 (47.3%)
Dexamethasone	68 (71.5%)
Therapeutic plasma exchange	11 (11.5%)
Inhaled nitric oxide	4 (4.2%)
Mesenchymal stem cells	5 (5.2%)
Time (days) from diagnosis to CCP transfusion, median (range)	7 (2-45)
Time (days) from obtaining patient consent to CCP transfusion, median (range)	2 (1-21)
Complications	
Septic shock	45 (47%)
ARDS	55 (58%)
AKI	54 (57%)
Thromboembolic events	9 (9.4%)
Outcomes	
Overall Survival	59 (62.1%)
Overall Mortality	35 (36.8%)
Secondary infections	57 (60%)
Follow-up from initial diagnosis, days, median (range)	33 (7-103)

Data presented as absolute number (percentage), unless specified otherwise.
CCP, COVID-19 convalescent plasma; ARDS, acute respiratory distress syndrome; ICU, intensive care unit
[a]Some data missing, *Individual percentage values are rounded and might not total 100%.

Results

- A total of 95 patients received CCP, 43 (45.2%) had severe COVID-19 disease, while 11 (11.5%) had critical or critical with multiorgan dysfunction
- Median time of follow up was 33 (range, 7-103) days
- Overall, 59 (62.1%) survived to discharge, 35 (36.8%) died. Deaths reported were due to ARDS, septic shock from secondary infections, complications of prolonged hospital stay
- 53 (55.7%) showed improvement in oxygen requirements 7 days post CCP transfusion
- 3 (3.1%) adverse events (transfusion reactions and volume overload) due to the transfusion were reported
- 42 (44.2%) patients had a negative SARS-CoV-2 RT-PCR at a median of 19 (range, 1 - 49) days after receiving convalescent plasma.

Conclusions

- Administration of convalescent plasma was found to be relatively safe, with favorable outcomes in this small cohort of relatively high acuity patients
- Larger studies including control arms are needed to establish the efficacy of convalescent plasma on clinical and virologic outcomes for patients with COVID-19

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