Retrospective Evaluation of High Titer Convalescent Plasma in Hospitalized Patients with COVID-19 Infection in Northern Colorado

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INTRODUCTION:
• Globally more than five and a half million people have died as a result of COVID-19. Convalescent plasma (CP) has been studied as a potential treatment and has produced mixed results. Currently, the Infectious Diseases Society of America recommends against the use of CP outside of clinical trials.
• Studies supporting CP suggest that early transfusion and high titer status are important variables.
• There have been only two studies published using both high titer and symptom onset (as opposed to hospital admission) as a measure of disease course.

METHODS:
Time period: 9/17/20 - 2/3/21
Hospitals: PVH, GH, MCR
- 1,137 patients admitted for COVID-19
- 587 Transfused, 550 Not Transfused
- 329 Transfused with High Titer CP
Analysis:
- 238 Charts reviewed
- 138 Patients received high titer CP (CPHIGH) - 25 within 3 days of symptom onset (CP3) - 113 later than three days (CPLate)
- 100 Patients not receiving CP (Control)
Endpoints:
- Primary: Mortality
- Secondary: Days in Hospital, Intubation Status

RESULTS:
Table 2: Number of patients in each subgroup meeting outcome measures

<table>
<thead>
<tr>
<th>Outcome</th>
<th>CP3 (n=25)</th>
<th>CPLate (n=113)</th>
<th>CPHigh (n=136)</th>
<th>Control (n=100)</th>
</tr>
</thead>
<tbody>
<tr>
<td># Deaths</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Discharged Alive</td>
<td>23 (92)</td>
<td>98 (87)</td>
<td>121 (88)</td>
<td>85 (85)</td>
</tr>
<tr>
<td>Patient Deceased</td>
<td>2 (8)</td>
<td>15 (13)</td>
<td>17 (12)</td>
<td>15 (15)</td>
</tr>
<tr>
<td>Intubated</td>
<td>Yes</td>
<td>2 (8)</td>
<td>17 (15)</td>
<td>14 (11)</td>
</tr>
<tr>
<td>No</td>
<td>20 (92)</td>
<td>95 (82)</td>
<td>100 (86)</td>
<td>99 (89)</td>
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<tr>
<td>Hospital Days admitted</td>
<td>8.35 +/- 11.14</td>
<td>6.61 +/- 11.83</td>
<td>9.53 +/- 11.87</td>
<td>6.78 +/- 6.15</td>
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CONCLUSIONS:
• The literature surrounding CP use as a treatment for COVID-19 is mixed, but recent studies have emphasized the importance of using only high titer units early in the disease course.
• While not statistically significant, there is a positive trend in our results to support the claim that those transfused early have the best outcomes.
• This is best demonstrated by a 51% lower likelihood of mortality in the CP3 group versus control group, and only a 13% reduction in mortality in the CPLate group versus control group.
• Our results highlight the importance of using date of symptom onset, as opposed to admission date, as a critical metric to stratify if a patient will benefit from high titer CP administration in treating COVID-19.

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