

Combined ECMO/CRRT Support in SARS-CoV-2: A Comparative Study



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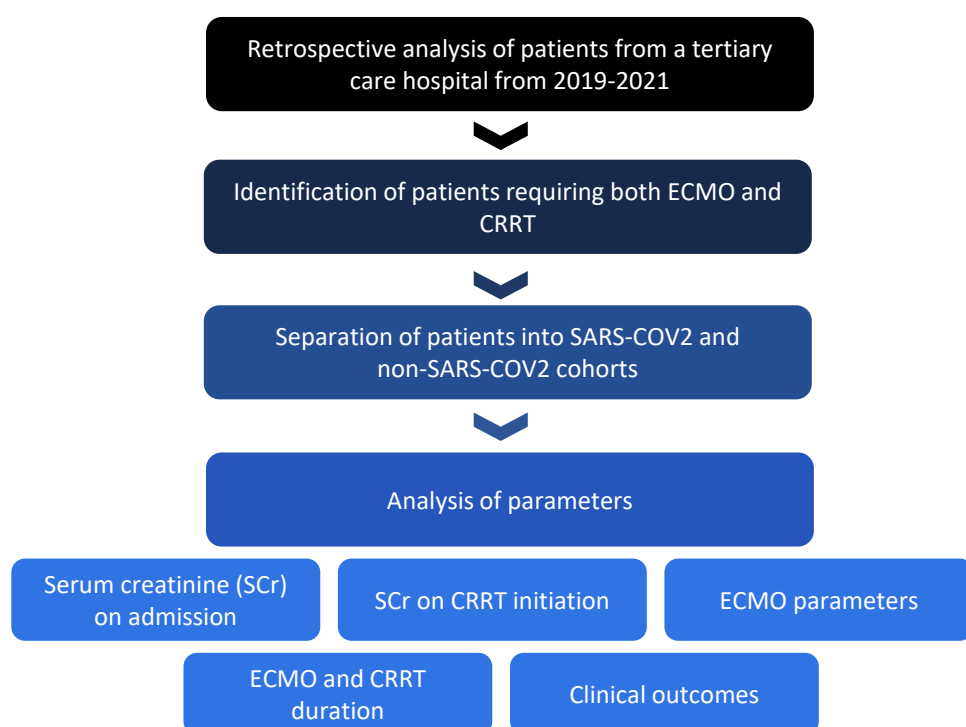
Abstract

- Extra Corporeal Membrane Oxygenation (ECMO) is a modality used as a salvage therapy for patients with refractory respiratory failure in the setting of Acute Respiratory Distress Syndrome (ARDS) (veno-venous ECMO) either alone, or in conjunction with states of decreased cardiac output (veno-arterial ECMO).
- Many patients concurrently develop renal insufficiency necessitating Continuous Renal Replacement Therapy (CRRT).
- Of particular interest is in the setting of SARS-CoV-2 where the most common etiology of kidney injury is Acute Tubular Necrosis (ATN).
- On comparison of the groups without and with SARS-CoV-2 receiving both modalities, initial and terminal creatinine levels did not predict duration of CRRT in these patients.
- Additional research is needed to further assess this result.

Introduction

- Use of ECMO in cardiac and and/or respiratory failure is increasing, particularly with the rise in SARS-CoV-2 infections.
- Acute kidney injury (AKI) is common, using CRRT to manage volume and electrolyte abnormalities.
- Few studies comparing outcomes between SARS-CoV-2 and non SARS-CoV-2 patients requiring both ECMO and CRRT exist.
- **Objective:** We sought to evaluate differences in outcomes between SARS- and non-SARS-CoV-2 patients receiving both ECMO and CRRT.

Methods and Materials



Statistical analysis: MP 16.0 (Cary, NC) and Excel 2018 (Redmond, WA)

Results

| | Non SARS-CoV2 | SARS-CoV2 | P- value |
|--------------------------------|----------------|----------------|----------|
| Number of patients | 65 | 35 | N/a |
| Baseline kidney disease | 28.30% | 9.10% | 0.03 |
| CRRT duration | 24 ± 20.7 days | 40 ± 31.5 days | 0.99 |
| ECMO duration | 28.3 ± 29 days | 45.4 ± 43 days | 0.98 |
| Mortality rate | 63.20% | 73.50% | 0.45 |

Table 1. Parameters outlined between Non SARS-CoV2 and SARS-CoV2 patients.

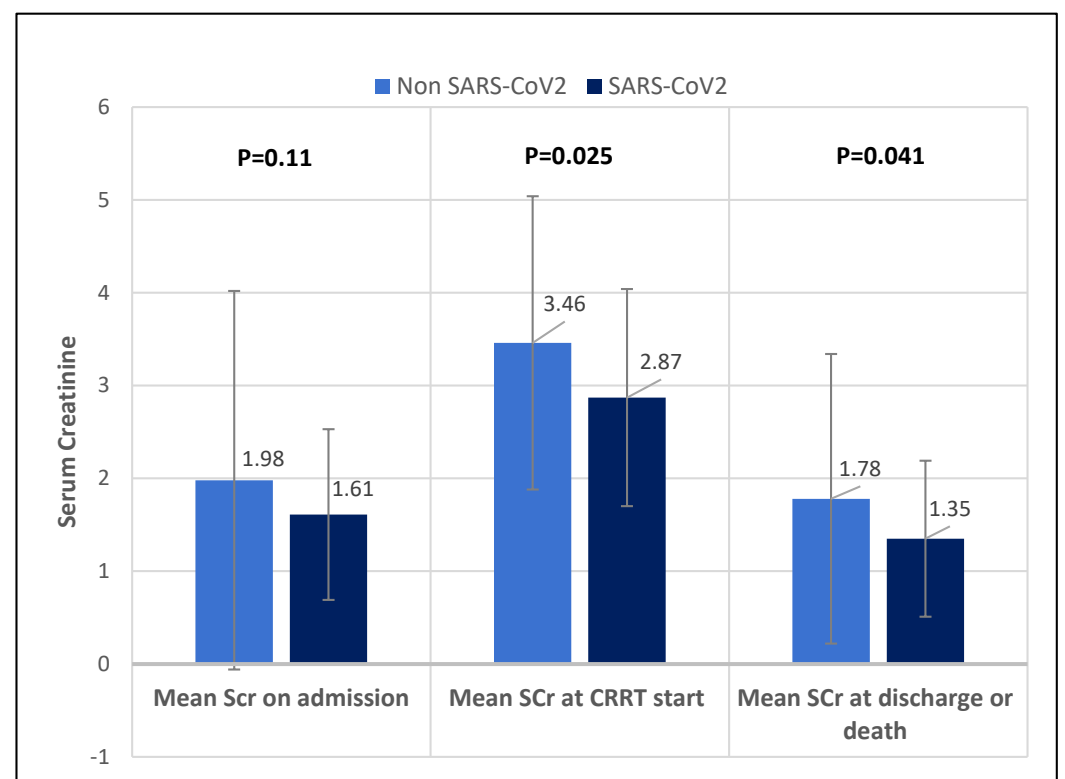


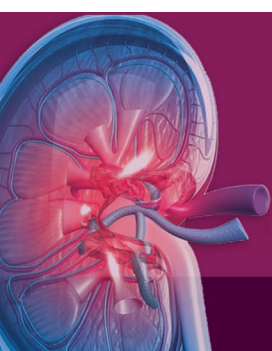
Figure 1. Comparison of Serum Creatinine (SCr) between Non SARS-CoV2 and SARS-CoV2 patients.

Discussion

- Our findings suggest that patients with SARS-CoV-2 infection had lower serum creatinine at the initiation and conclusion of CRRT.
- There were no significant differences in CRRT or ECMO duration.
- Both cohorts had similar, albeit high, mortality rates.

Conclusions

- The presence or absence of SARS-CoV2 infection did not have significant impact on CRRT or ECMO duration.
- Additional patient enrollment and research are needed to better support these trends with a greater degree of confidence.
- Utilization of novel markers of renal function would also provide further insight into the relationship between SARS-CoV-2 and acute kidney injury severity.



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