

CCCC AKI Sub-study

Rationale for Study

- AKI and ARDS are closely linked condition seen in the critically ill. AKI rates of 25-60% in mechanically ventilated patients with ARF/ARDS, and AKI in this population substantially reduces survival [1-3].
- The causal relationship for increased mortality between ARDS and AKI is not clear. Ventilation strategy, particularly high stretch lung ventilation strategies cause kidney tubular apoptosis in preclinical studies [4]. PEEP, possibly through increased venous congestion may impair kidney function by reducing glomerular blood flow and urine production in animal and human studies [5].
- A secondary analysis of the LUNG SAFE study [6], found AKI was prevalent, seen in 39% of patients within 1 day ARDS diagnosis of ARDS in 39% of patients, while even modest elevations in creatinine was associated with worsened outcome [7]. Hospital mortality increased from 31% in patients with no AKI to 50% in mild-moderate AKI, and 58% in severe AKI.
- AKI is a frequent and severe complication of COVID-19 and highlight the importance of assessing, defining, and reporting the course of AKI [8, 9]. Impaired coagulation, as in the presence of SARS-CoV2, might reduce renal perfusion with a decrease in urinary output and blood purification.
- There is paucity of data regarding clinical and laboratory characteristics of AKI in patients with COVID-19 and further studies describing and analysing the clinical course of patients with COVID-19 include appropriate indices of kidney function are needed.
- The ECMOCARD study is an excellent opportunity to determine the incidence and severity of COVID-induced AKI, the impact of renal dysfunction severity, critical care management (e.g. mechanical ventilation, fluids, nephrotoxic drugs), the extent of recovery of renal function, and outcomes from COVID-19 critical illness.

Inclusion Criteria

1. As for ECMOCARD Study patients
2. In patients in whom mild AKI develops (serum creatinine rise >20% from baseline; or upper normal level where no evidence of CRF), eCRF automatically guides site investigator to page to join the AKI sub-study characterize these patients.

Study Endpoints

1. Number of COVID-19 AHRF/ARDS patients developing AKI as defined by AKIN/KDIGO network criteria criteria [10] using creatinine and urine output as a definition
2. Influence of altered coagulation on AKI incidence and on mortality in COVID-19 AHRF/ARDS

3. Effect of MV modalities on AKI, specifically PEEP, Prone, Neuromuscular blockade
4. Outcomes of AKI in this population, including extent of recovery or renal function.
5. Mortality difference based on stages of AKIN/KDIGO network criteria AKI in patients with COVID-19 AHRF/ARDS

References

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