OPINION

Acute kidney injury management in coronavirus disease

Katie Laird, Richard Brawn

Laird K, Brawn R. Acute kidney injury management in coronavirus disease. J Kidney Treat Diagn. 2022; 5(5):56-7.

ABSTRACT

Patients with coronavirus illness who are hospitalized frequently get acute renal injury in 2019. Morbidity and death are significantly higher in patients with coronavirus illness 2019 who suffer acute renal injury, especially in the intensive care unit, similar to acute kidney injury associated with other disorders such as sepsis and heart surgery. Follow current guidelines for method, dose, and timing of beginning of renal replacement therapy while treating acute kidney injury brought on by coronavirus illness in 2019. To avoid circuit clotting, however, coronavirus illness patients in 2019 must closely monitor their anticoagulant regimens due to their extreme hypercoagulability. When kidney replacement therapy demand exceeds supply due to an acute surge, cautious measures must be taken to safely postpone renal replacement therapy.

INTRODUCTION

Coronavirus Disease 2019 (COVID-19) provides a thorough description of Acute Kidney Damage (AKI) and links it to high morbidity and fatality rates. AKI occurred in 22% of hospitalized patients in a major study of 5700 patients in a New York healthcare system, and 3.2% of those patients needed Kidney Replacement Therapy (KRT). In severely ill COVID-19 patients, the risk for AKI and the requirement for KRT are much higher, and there is a link between invasive ventilation and the start of KRT. According to data from prior research, the Intensive Care Unit (ICU) had an AKI incidence of 61%–76%, and 26%–45% of COVID-19 patients in the ICU required KRT.

It is significant to emphasize that there are few resources available for KRT, and during the pandemic, there was a severe shortage of dialysis resources. If resources are limited, it is crucial to handle AKI safely and wisely without using any analytical procedures, as this will postpone the start of KRT. A furosemide stress test may assist identify euvolemic patients with AKI stage I or II who are more likely to proceed to advanced AKI and require KRT. However, since usage of loop diuretics in patients with AKI in general is not related with lower need for KRTI, higher or escalating doses of loop diuretics should be saved for patients with volume overload. Additionally, the use of diuretics in individuals with euvolemia or hypovolemia with severe COVID-19 respiratory failure may worsen kidney problems.

In patients at risk for AKI, balanced solutions may be preferable over normal saline if volume resuscitation is necessary. This is because balanced solutions have been shown in two recent trials to reduce major adverse renal events and the requirement for KRT. In the SALT-ED trial and the ICU, these 2 single-center pragmatic studies compared balanced crystalloids with ordinary saline for volume resuscitation (SMART trial). The incidence of significant adverse renal events with balanced solution was 4.7% vs. 5.6% in the SALT-ED trial with 13,347 participants (adjusted odds ratio: 0.82, Confidence Interval [CI]: 0.70-0.95; P=0.01). In contrast, buffered solutions did not show a decrease in the incidence of AKI in the Saline vs. Plasma-Lyte for Intensive Care Fluid Therapy experiment. O, although balanced crystalloids may not always be required, they should be taken into consideration in patients who present with hypotension, a strong systemic inflammatory response, and increased serum creatinine. In the Sodium Bicarbonate to Treat Severe Acidosis in the Critically Ill trial, it was found that intravenous injection of bicarbonate solution decreased the requirement for KRT in patients with critical illness (35% vs. 52%, 95% CI: 264 to 70; P = 00009). This is relevant to metabolic acidosis. The start of KRT was also delayed in the patients receiving bicarbonate infusion (19 days as opposed to 8 days, CI: 3.9-15.6, P 0.0001). The patients exhibited

Editorial Office, Journal of Kidney Treatment and Diagnosis, United Kingdom

Correspondence: Richard Brawn, Editorial Office, Journal of Kidney Treatment and Diagnosis, United Kingdom, e-mail kidney@eclinicalsci.org

Received: 07-September-2022, Manuscript No. puljktd-22-5718; Editor assigned: 09-September-2022, PreQC No. puljktd-22-5718 (PQ); Reviewed: 16-September-2022, QC No. puljktd-22-5718 (Q); Revised: 19-September-2022, Manuscript No. puljktd-22-5718 (R); Published: 26-September-2022, DOI: 10.37532/puljktd.22.5(5).56-7

severe metabolic acidosis at baseline, with a blood bicarbonate level of 13 mmol/L and a pH of 7.15. Over the past few years, fresh potassium binders have become available in the US. Compared to other medications, sodium zirconium cyclosilicate acts more quickly and has been proven to lower potassium levels in a variety of settings, including the emergency room. Although patiromer is also licensed to treat hyperkalemia, its delayed onset of action compared to sodium zirconium cyclosilicate (7 hours vs. 1 hour) makes it less likely to be suitable for correcting hyperkalemia right away. In the event of a surge, increasing the dosages of intravenous loop diuretics in patients with volume overload, administering sodium bicarbonate solution intravenously to those with severe metabolic acidosis, and using fast-acting potassium binders like sodium zirconium cyclosilicate for hyperkalemia may all delay KRT and help save precious resources. It has been particularly difficult for hospitals to give KRT during acute surges as they tried to strike a compromise between giving each patient the recommended dose of dialysis while also preserving resources to ensure that every patient received KRT. The following four factors should be taken into account when providing KRT to patients during this pandemic:

(1) appropriate and prompt KRT for every patient;
(2) minimizing staff exposure to the coronavirus 2 that causes severe acute respiratory syndrome;
(3) conserving personal protective equipment and dialysis consumables; and
(4) ensuring patient safety. Although there is debate about the best time to start KRT in AKI of any etiology, multicenter studies in patients with sepsis and other conditions did not show any advantages to starting KRT sooner.

There is no evidence to recommend the early commencement of KRT in patients with AKI related to COVID-19. KRT should not be started depending on the stage of AKI; rather, it should be taken into consideration when conservative therapies are unable to control life-threatening complications of AKI. We chose the initial modality of KRT in accordance with the Kidney Disease Improving Global Outcomes (KDIGO) committee's recommendations based on the patient's hemodynamic condition. 20 The dose of KRT should also be determined by KDIGO guidelines, with the proviso that it may need to be reduced if there is a shortage of nursing staff, KRT replacement fluid, or dialysate solutions. Patients who have AKI related to COVID-19 are often managed in a manner similar to patients who have AKI related to other etiologies, such as sepsis. Before thinking about starting KRT, conservative control of volume overload, metabolic acidosis, and hyperkalemia can be tried. Anticoagulation should be started at the beginning of KRT since KRT, particularly CKRT and PIKRT, is linked to a high rate of circuit clotting in patients with COVID-19. Treatment is extremely difficult to deliver KRT during a pandemic with an acute inflow of hospitalized patients, and meticulous planning is necessary to deliver safe and effective KRT to every patient who need it.