

Experience of continuous renal replacement therapy in critically ill patients with acute kidney injury: a single-center retrospective exploratory study.

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Introduction

Acute kidney injury is a complication of critical patients that has been associated with a high risk of hospital mortality, where identifying modifiable and non-modifiable clinical variables at the start of dialysis that are associated with hospital survival can help, not only in prognosis, but also in clinical classification.

Whether this reflects the severity of the disease or is an independent risk factor is unknown. The objective of this study was to describe the severity and mortality in a group of critically ill patients with acute kidney injury who required continuous renal replacement therapy.

Methods and Materials

A descriptive, observational and retrospective study was carried out in patients with acute kidney injury requiring continuous renal support therapy in the intensive care units of a tertiary reference medical center, from January 2013 to March 2022. The primary outcome was hospital mortality.

Results

Of the 136 critically ill patients with acute kidney injury admitted to intensive care units, the mean age was 56.45 ± 19.81 years, with a predominance of men (61%) and the mean SOFA score was 11.8 ± 4.3 (table 1), starting CRRT in all patients.

The indications for CRRT were fluid overload (22%), acute kidney injury with oliguria and fluid overload (60%), acute kidney injury with oliguria (12%), acute kidney injury without oliguria (6%). Mean overload-adjusted serum creatinine before the start of CRRT was 3.37 ± 1.18 mg/dl, fluid overload was 12.56 ± 4.45 liters, with a percentage of $13.2 \pm 6.4\%$. The most frequent causes of AKI were shock of any cause (72%) (of these were mainly due to cardiogenic shock (51%), septic shock (24%) and mixed shock (14%), postsurgical (12%) and syndrome (without shock) (7%), of the total number of patients, 82% required vasopressor support and 86% invasive mechanical ventilation, the most common modality of CRRT being continuous venovenous hemodiafiltration (CVVHDF) (72%), with a dose average effluent of 28.94 ± 12.34 ml/kg/hr and ultrafiltrate of 1.34 ± 0.34 ml/kg/hr. The incidence of overall survival was 27%.

Table 1. Demographic and clinical features

Variable	n=136 (total) mean \pm SD	n=36 (survivor) mean \pm SD	n=100 (non survivor) mean \pm SD	p
Age (years)	56.45 \pm 19.81	54.34 \pm 17.15	58.12 \pm 18.56	0.191
Male/female, n	83/53	22/14	61/39	0.094
Intubated, n(%)	117 (86)	17(47)	100 (100)	0.001
Vasopressor, n (%)	112 (82)	19 (52)	93 (93)	0.003
Fluid overload CRRT initiation, (%)	13.2 \pm 6.4	5.2 \pm 3.9	15.1 \pm 7.2	0.004
SOFA	11.8 \pm 4.3	6.7 \pm 2.2	13.1 \pm 5.1	0.04
Serum creatinine adjusted for overload (mg/dl)	3.37 \pm 1.18	3.41 \pm 1.21	2.88 \pm 1.11	0.134
Effluent dose (ml/kg/hr)	28.94 \pm 12.34	26.14 \pm 10.21	30.87 \pm 11.31	0.093

Conclusions

The results of our study suggest that acute kidney injury in patients undergoing continuous renal replacement therapy presents a high risk of in-hospital death. This increased risk cannot be explained solely by a more pronounced severity of the disease. Our results provide strong evidence that acute kidney injury presents a specific and independent risk factor for poor prognosis.



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