48

Observational Study: Utilisation of Citrate Versus Heparin Anticoagulation for Continuous Renal Replacement Therapy in Intensive Care Unit May **Reduce Patients Need for Blood Transfusion**

Background

Citrate is an anticoagulant agent that has shown promise with favourable efficacy and safety profiles for use during continuous renal replacement therapy (CRRT). These benefits have been well reported in the literature¹. However, there has only been very limited number of studies comparing citrate to heparin, which is more commonly used in CRRT.

Objective

As one of the first intensive care units within East of England to use citrate in place of heparin, we have conducted this study to compare the transfusion frequency and volume associated with using these agents.

Methodology

We carried out a retrospective observational study to compare outcomes related to the use of heparin and citrate treatment protocols. The study population comprised the last 40 consecutive patients with acute kidney injury requiring CRRT for more than 24 hours who received heparin or citrate.

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> We excluded patients with active bleeding, preexisting coagulopathy, previously known end stage renal failure and all surgical patients in our study. The ICU electronic records system (Metavision) was reviewed for patient demographics, cause of acute kidney injury, mean haemoglobin levels, transfusion frequency, transfusion volume and final outcome. Collected data was analysed using the standard t-test to determine significant differences demographics, volume and frequency of transfusion and mean Hb. Fisher's exact test was used to analyse the final outcome data.



• Significantly less units of packed red cells were transfused in the citrate treatment arm compared to the heparin arm (p=0.006). Furthermore, only 22.5% of patients in the citrate arm required transfusion, compared to 53.5% in the heparin arm.



treatment groups.

Conclusion

This study shows that citrate as a regional anticoagulant agent demonstrated benefits over heparin in CRRT with respect to the need for transfusion and number of units the total transfused.

References:

. Gerd R Hetzel, Michael Schmitz, Heimo Wissing et al. Regional citrate versus systemic heparin for anticoagulation in critically ill patients on continuous venovenous haemofiltration: a prospective randomized multicentre trial. Nephrol Dial Transplant (2011) 26: 232–239



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•There was no significant difference in the mean APACHE score, age, mean haemoglobin level, length of treatment and mortality rate between