“We aim to compare citrate 4% catheter lock solution versus heparin in terms of event-free survival of the first non-tunneled hemodialysis catheter inserted in ICU patients” Bruyère et al (2014).

Reference:

Bruyère, R., Soudry-Faure, A., Capellier, G., Binquet, C., Nadji, A., Torner, S., Blasco, G., Yannaraki, M., Barbar, S.D. and Quenot, J-P. (2014) Comparison of heparin to citrate as a catheter locking solution for non-tunneled central venous hemodialysis catheters in patients requiring renal replacement therapy for acute renal failure (VERROU-REA study): study protocol for a randomized controlled trial. Trials. 15:449.

Abstract (provisional):

Background: The incidence of acute kidney injury (AKI) is estimated at 10 to 20% in patients admitted to intensive care units (ICU) and often requires renal replacement therapy (RRT). ICU mortality in AKI patients can exceed 50%. Venous catheters are the preferred vascular access method for AKI patients requiring RRT, but carry a risk of catheter thrombosis or infection. Catheter lock solutions are commonly used to prevent such complications. Heparin and citrate locks are both widely used for tunneled, long-term catheters, but few studies have compared citrate versus heparin for patients with short-term, non-tunneled catheters. We aim to compare citrate 4% catheter lock solution versus heparin in terms of event-free survival of the first non-tunneled hemodialysis catheter inserted in ICU patients with AKI requiring RRT. Secondary objectives are the rate of fibrinolysis, incidence of catheter thrombosis and catheter-related infection per 1,000 catheter days, length of stay in ICU and in-hospital and 28-day mortality.

Methods: The VERROU-REA study is a randomized, prospective, multicenter, double-blind, parallel-group, controlled superiority study carried out in the medical, surgical and nephrological ICUs of two large university hospitals in eastern France. A catheter lock solution composed of trisodium citrate at 4% will be compared to unfractionated heparin at a concentration of 5,000 IU/mL. All consecutive adult patients with AKI requiring extracorporeal RRT, and in whom a first non-tunneled catheter is to be inserted by the jugular or femoral approach, will be eligible. Catheters inserted by the subclavian approach, patients with acute liver failure, thrombopenia or contraindication to systemic anticoagulation will be excluded. Patients will be followed up daily in accordance with standard practices for RRT until death or discharge.

Discussion: Data is scarce regarding the use of non-tunneled catheters in the ICU setting in patients with AKI. This study will provide an evidence base for recommendations regarding the use of anticoagulant catheter locks for the prevention of dysfunction in non-tunneled hemodialysis catheters in patients with AKI in critical or intensive care.

Trial registration: Registered with Clinicaltrials.gov (registration number: NCT01962116) on 27 August 2013.

Full Text

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