Infection prevention in haemodialysis patients: A comparative analysis of heparin and trisodium citrate (TSC) 30% as catheter locking solutions at Albert Inkosi Hemodialysis Unit

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Abstract

Introduction: Infection is a leading cause of morbidity and mortality rates among haemodialysis patients. Heparin has long been the standard locking solution for catheters; however, the use of trisodium citrate (TSC) has gained popularity, recently. Studies demonstrated that TSC 4% was superior to heparin in reducing infection rates. However, the effectiveness of TSC 30% in developing countries, where resource constraints may limit access to the solution, remains unclear.

Materials and Methods: A retrospective study was conducted using laboratory results of 373 patients treated over a 4-year period, between 2018 and 2022 at the haemodialysis unit, Inkosi Albert Luthuli Central Hospital. Initially, their catheters were locked with heparin and then switched to TSC 30%. Data were stratified by white blood cell (WBC) count and C-reactive protein (CRP) to compare infection rates. Patency was assessed using platelet count and haematocrit levels, and dialysis clearance was evaluated using urea reduction ratio (URR) and kt/v. Statistical analysis involved using the t-test.

Results: There was a statistically significant difference in CRP between heparin and TSC 30% groups (P=0.016), indicating a lower infection rate with TSC 30%. Higher dialysis adequacy was associated with the use of TSC 30% (p=0.007). No statistically significant difference in platelet counts was observed (P=0.491). These findings suggest that TSC 30% is an effective locking solution for haemodialysis catheters.

Conclusion: TSC 30% can be an alternative solution to heparin in terms of infection prevention and may offer additional benefits, such as reduced healthcare costs associated with infection-related complications. Considering the financial constraints in South Africa, TSC 30% presents a promising strategy for improving infection control and patient outcomes in haemodialysis.