

Effect of citrate based dialysate on anticoagulation in maintenance haemodialysis patients.

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Background: During haemodialysis (HD), blood is exposed to an extracorporeal circuit which activates thrombogenic pathways and clotting and may be associated with increased inflammation and acceleration of atherosclerosis. Even subclinical clotting of the dialysis circuit may reduce effective dialyser surface area and pore size, decreasing both small and middle solute clearance. An alternative to systemic heparin anticoagulation for HD is citrate dialysate (CD) which contains a small amount of citric acid. Aim of our study was to investigate whether CD results in reduced cumulative heparin dose (CHD) compared to acetate dialysate (AD) in HD patients.

Methods: 10 patients receiving HD with AD were recruited in our study. The above study population HD prescription converted to session with CD for an 9 month period. Serum total calcium, albumin, bicarbonate, pH, haemoglobin, haematocrit, kt/V and CRP were collected at the beginning of the first HD session of the study, after 4 months and in the end of the protocol. After enrolment, data regarding each patient's dose of intradialytic heparin were collected and were evaluated according to a visual clotting score.

Results: During study period 647 HD sessions were under notice. 100% of our patients tolerated the procedure with CD well without issues. CHD reduced gradually to 40,5% of the initial dose. None of our patients suffered from bleeding complications. One out of 10 patients appeared to have asymptomatic hypocalcemic episode. We did not have any HD treatment that had to be abandoned because of clotting in the extracorporeal circuit. Metabolic, inflammatory and dialysis adequacy parameters along with hemoglobin levels were stable during the study period.

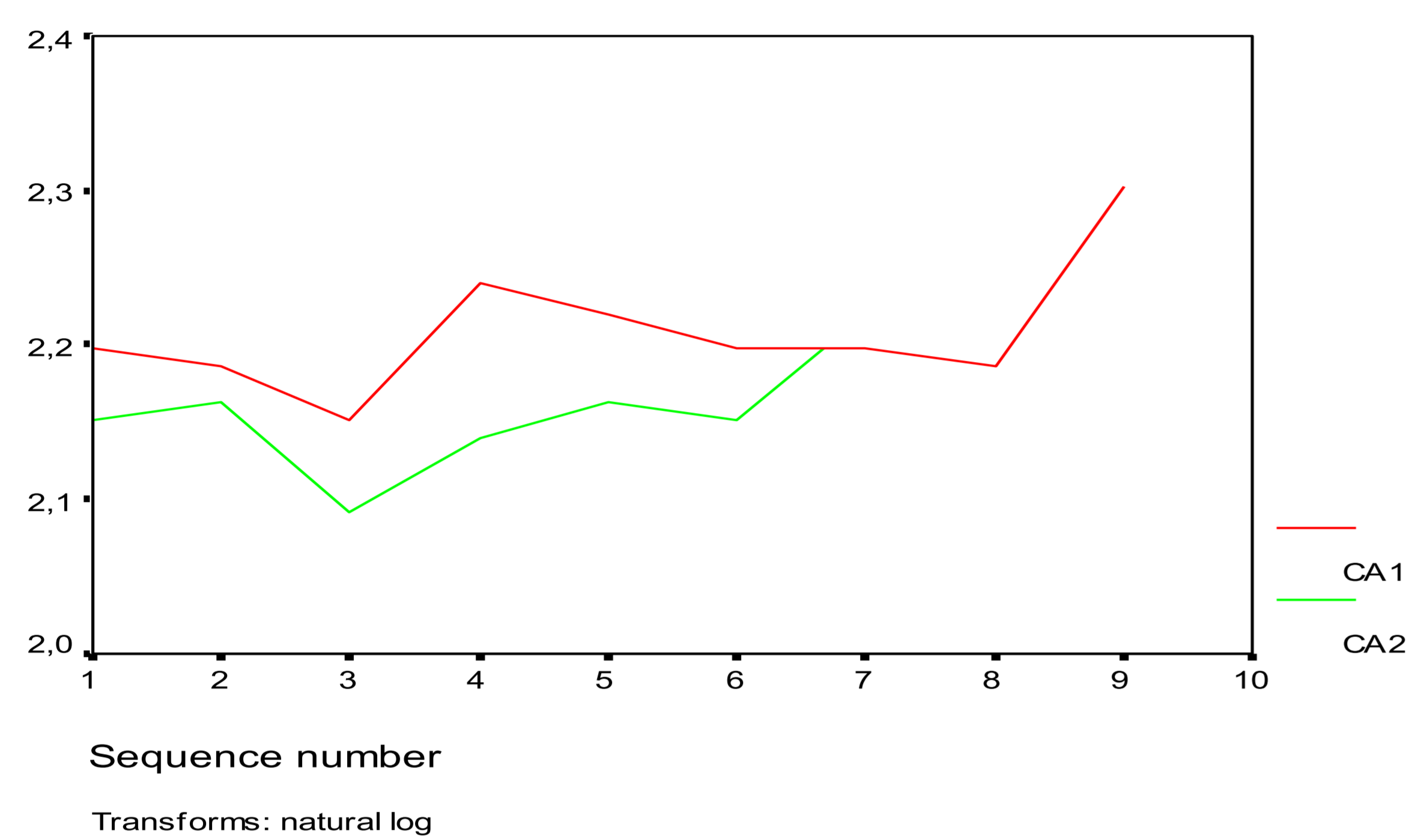


Fig 1. Calcium levels fluctuation during study period (Ca1 at begging and Ca2 at the end of the study).

Conclusions: Our findings suggested that it is feasible to use CD to dialyse patients safely and effectively. With the contribution of CD, it was possible to anticoagulate the extracorporeal circuit with significant less CHD in a safe and simple manner without minor or major adverse reactions for the patients' clinical condition.

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