Sodium citrate for filling haemodialysis catheters

Sir,

Patients dialysed via a catheter frequently present problems of obstruction and decreased flow. Different anticoagulant (1 and 5% heparin [1], urokinase [2], tPA [3] and oral anticoagulants [4]) have been used to ensure the patency of these catheters; however, no standardized protocol exists for avoiding thrombosis and the risk of bleeding. We use 5% heparin when correct flow with 1% heparin is difficult to maintain. Purchase and Gault described the use of sodium citrate for filling a Permcath catheter in a patient allergic to heparin [5].

The aim of the present work was to demonstrate the usefulness of sodium citrate at 46.7% for maintaining dialysis catheters permeable, particularly in patients with bleeding problems. Sodium citrate was compared with 5% heparin in the same catheter. We used 5 ml sterile monodies of 46.7% sodium citrate.

In all cases filling was performed by the administration of 20 ml of physiologic saline into each lumen of the catheter and later the anticoagulant under study (sodium citrate

46.7% vs heparin 5%). The amount of anticoagulant administered corresponded to the volume of the catheter lumen.

The protocol was applied in 10 patients with acute renal failure on conventional haemodialysis with double-lumen catheter. In all cases, 2500 IU of dalteparin were used during haemodialysis. Four catheters were inserted into the right jugular vein and six in the internal femoral vein. Samples were taken peripherally 60 min after the haemodialysis session.

Sixty minutes after filling of the catheter, coagulation status remained unchanged (prothrombin time 85%; partial thromboplastin time 37 min 6 s in patients in whom sodium citrate was used, thereby avoiding the risk of bleeding, whereas it was altered in 100% cases when 5% heparin was used (prothrombin time 64.7%, partial thromboplastin time 90 s) (Figures 1–2).

Mean blood flow of 287 ml/min was maintained after 2 weeks of follow-up in catheters filled with sodium citrate. No patient presented alkalosis or hypocalcaemia resulting from sodium citrate administration.

Despite the difficulty in establishing a single filling protocol for haemodialysis catheters which avoids flow blockage and the risk of bleeding, we recommend filling the catheter with sodium citrate 46.7%.

Department of Nephrology
Hospital Universitari 'Germans Trias i Pujol'
Badalona
Spain

B. Bayés
J. Bonal
R. Romero
TF-dependent pathway. TF is a single-chain integral plasma factor levels in glomerulonephritis: A potential marker of glom-

erular pathology?

Is tissue factor a mediator of fibrin deposition in glomerular disease? Understanding the mechanisms leading to Coagulation activation and fibrin deposition have been asso-

1. Trivedi HS, Twardowski ZJ. Use of double-lumen dialysis cath-

eters. Loading with locked heparin. ASAIO J 1997; 43: 900–903

2. Twardowski ZJ. The clotted central vein catheter for haemodia-


3. Paulsen D, Reisoether A, Aasen M, Fauchals P. Use of tissue

plasminogen activator for reopening of clotted dialysis catheters.
Nephron 1993; 64: 468–470

4. Wing AJ, Curtis JR, De Wardener HE. Reduction of clotting in

3: 143–145

5. Purchase L, Gault MH. Hemodialysis with a Permcath kept open

with streptokinase and later citrate in a heparin-sensitive patient.
Nephron 1991; 58: 119–120