Continuous dialysis by gravity through the filter of the extracorporeal membrane oxygenation

PONTE, Belen, et al.
current therapeutic options including non-specific immuno-suppression, conservative treatment with ACE inhibition, blood pressure reduction and lipid control. In MN associated with HCV infection, the rationale is enforced by the selective action of rituximab on B lymphocytes. However, large randomized clinical trials with longer follow-up are needed, to verify the efficacy and the long-term tolerability of rituximab therapy, in both idiopathic and secondary MN.

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SIR,

Continuous renal replacement therapies (CRRT) are characterized generally by their good haemodynamic tolerance [1–4]. However, in some critical clinical situations, even CRRT are impracticable.

A 22-year-old man with Marfan syndrome, admitted to the ICU after emergency dissecting aneurysm surgery of the thoracic aorta, presented extreme haemodynamic instability (blood pressure: 46/35 mmHg; Central venous pressure: 9 cmH2O). Despite fluid resuscitation (12 l) including sodium bicarbonate solutions, vasoactive drugs, intraaortic balloon counterpulsation and extracorporeal membrane oxygenation (ECMO) support, he remained unstable. Acute kidney injury developed with anuria, high levels of serum creatinine (3.97 mg/dl), BUN (31 mg/dl), toxic hyperkalemia (8.2 mmol/l) and hyperlactactatemia (10.1 mmol/l). Temperature was 36°C, arterial pH 7.32; pO2 55.6 mmHg; pCO2 37.7 mmHg and bicarbonate 19.2 mmol/l.
As standard renal replacement therapies could not be used due to the blood pressure (BP) levels, we tried another depurative technique.

The ECMO system haemofilter was used as dialysis membrane (1.4 m² poly-ethersulfone membrane; Cobe cardiovascular, Mirandola, Italy). Dialysis fluid was provided by two 5 l bags suspended above the patient (Figure 1). A ‘Y’ tube system was used to deliver a kalium-free dialysate (Na 140 mmol/l, bicarbonate 34 mmol/l). To control dialysis flow speed, two plastics locks provided by the manufacturer alternatively closed and opened the system. From the filter, another ‘Y’ tube collected the drainage fluid in two 5 l bags below the patient. Each bag was weighed, using an electronic newborn scale, to calculate the ultrafiltration volume. A ‘Y’ line returned the blood from the ECMO: the main branch directly to the patient and the other to the haemofilter. The dialysis flow was maintained at 291 ml/min for 2 h and decreased to 83 ml/min for 3 h (mean flow 166 ml/min). Patient’s net balance throughout the procedure was zero and temperature 35.5°C. After 5 h, BP increased to 76/45, pH to 7.4, kaliemia decreased to 6.2 mmol/l, lactate to 8.5 mmol/l and bicarbonate remained stable. In the absence of a positive fluid balance, improvement of kaliemia was attributed to dialysis. Improvement of BP could be due to the decrease in potassium levels and the slightly lower core temperature [5]. Lactate decrease was probably due to a better tissue perfusion, rather than a dialytic effect [6]. Gravity dialysis could then be changed to conventional CRRT.

In summary, the technique of continuous dialysis by gravity using the ECMO filter could be a therapeutic option in critically unstable patients, unable to tolerate CRRT and requiring urgent management of electrolytic disturbances (Figure 2).

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3. Van Bommel EFH. Should continuous renal replacement therapy be used for “non-renal” indications in critically ill patients with shock? Reanimation 1997; 33: 467–471


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Does a fibrin sheath formed around a catheter embolize upon removal of the catheter?

Sir,

Central venous catheters (CVC) are commonly used in haemodialysis patients. Encasement of the catheter by a fibrin sleeve is a well known complication which can interfere with catheter function and prevent effective haemodialysis [1]. These sleeves do not come with the catheter upon removal, but remain in the vein. Although millions of CVC are inserted and removed every year, there are few clinical reports describing what happens to the sleeve remaining inside the venous lumen upon removal [2,3]. We conducted a prospective study to assess whether fibrin sheath formed around a short-term haemodialysis catheter embolizes or not during removal of the catheter.

The study was approved by the institutional review board, and informed consent was obtained from all patients before the procedure. Forty consecutive patients [25 women (63%), 15 men, mean age 58 ± 21 years] with a short-term haemodialysis catheter were evaluated for presence of pericatheter fibrin sheath and possible embolization upon removal of the catheter.