

LETTER

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Early mobilization on continuous renal replacement therapy is safe and may improve filter life

Frederic M Jacobs

See related research by Wang *et al.* <http://ccforum.com/content/18/4/R161>

In their study Wang and colleagues [1] found that mobilization during continuous renal replacement therapy (CRRT) is safe, and did not lead to filter circuit clotting. However, I feel that this work raises two remarks.

First, by delivering CRRT via continuous venovenous hemodiafiltration (CVVHDF) with a dialysate rate of 20 ml/kg/hour, a replacement fluid rate of 15 ml/kg/hour and a low effluent fluid removal rate, the filtration fraction, a major determinant of clotting, may have been

lower than the one resulting from continuous venovenous hemofiltration (CVVHF), which is as much used as the CRRT mode [2]. Furthermore, details concerning the blood flow (which impacts filtration fraction) are lacking. Thus, generalization of these results should probably be tempered.

Finally, regarding the exclusion criteria, the use of intermittent hemodialysis may be the best way to ensure daily patient mobilization, at a much lower cost [3].

Authors' response

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We read the letter by Jacobs with interest. We agree that a combined dose of 35 ml/kg/hour (incorporating both convective and diffusive clearance) in CVVHDF mode would reduce filtration fraction compared with a pure convective mode such as CVVHF. However, there is no conclusive evidence that filter life is related to filtration fraction, while there is some evidence to the contrary [4]. Our original manuscript agreed that the generalizability of the results should be tempered and stated that we felt large multi-center studies were warranted to confirm the findings [1]. We agree that blood flow rates in the circuit should be collected in such studies, as this may be an independent confounding factor for circuit life and filtration fraction. However, we conducted an additional *post hoc* sensitivity analysis adjusting for blood flow and the effect of the MOVE (movement on vascular catheter evaluation) intervention on filter life was still significant in our cohort (regression co-efficient (robust 95% CI), P value = 14.3 hours (5.3, 23.3), $P = 0.003$).

Moreover, mobilization restrictions placed on patients undergoing CVVHDF via femoral vascath frequently preclude the delivery of evidence-based practice [5, 6], where early mobilization reduces ventilation duration and ICU and hospital length of stay [7]. Whilst intermittent hemodialysis is an alternative method of CRRT delivery, CVVHDF is the therapy of choice in over 50% of Australian ICUs (unpublished data). The aim of our study was to test whether patients subjected to continuous therapies via femoral access could be safely mobilized. We reiterate our conclusions, which were that mobilization of patients undergoing CRRT via femoral vascular access was safe and feasible [1].

Abbreviations

CRRT: Continuous renal replacement therapy; CVVHDF: Continuous venovenous haemodiafiltration; CVVHF: Continuous venovenous haemofiltration.

Competing interests

The author declares that he has no competing interests.

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References

1. Wang YT, Haines TP, Ritchie P, Walcker C, Ansell TA, Ryan DT, et al. Early mobilization on continuous renal replacement therapy is safe and may improve filter life. *Crit Care*. 2014;18:R161.
2. Legrand M, Darmon M, Joannidis M, Payen D. Management of renal replacement therapy in ICU patients: an international survey. *Intensive Care Med*. 2013;39:101–8.
3. Klarenbach S, Manns B, Pannu N, Clement FM, Wiebe N, Tonelli M, et al. Economic evaluation of continuous renal replacement therapy in acute renal failure. *Int J Technol Assess Health Care*. 2009;25:331–8.
4. Brophy PD, Somers MJ, Baum MA, Symons JM, McAfee N, Fortenberry JD, et al. Multi-centre evaluation of anticoagulation in patients receiving continuous renal replacement therapy (CRRT). *Nephrol Dial Transplant*. 2005;20:1416–21.
5. Leditschke IA, Green M, Irvine J, Bissett B, Mitchell IA. What are the barriers to mobilizing intensive care patients? *Cardiopulm Phys Ther J*. 2012;23:26–9.
6. Hodgson CL, Stiller K, Needham DM, Tipping CJ, Harrold M, Baldwin CE, et al. Expert consensus and recommendations on safety criteria for active mobilization of mechanically ventilated critically ill adults. *Crit Care*. 2014;18:658.
7. Kayambu G, Boots R, Paratz J. Physical therapy for the critically ill in the ICU: a systematic review and meta-analysis. *Crit Care Med*. 2013;41:1543–54.