

Efficiency of post- and pre-dilution hemofiltration (HF) and hemodiafiltration (HDF)

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We reported at the 3rd PCRRT meeting HF shows superior removal of solute than HD under identical conditions. To evaluate the efficiency of other modalities, we performed this examination.

Subjects and Methods: We performed CRRT on rabbits with acute renal failure at blood flow rate of 10 ml/min. Post-dilution HF at an ultrafiltrate flow rate of 200 ml/h (Group 1), pre-dilution HF at ultrafiltrate flow rates of 200 ml/h (Group 2) and 1200 ml/h (Group 3) or HDF at a dialysate flow rate of 1000 ml/h and ultrafiltrate flow rate of 200 ml/h (Group 4) were performed. Urea and creatinine concentrations in blood and drainage were determined. Cleared volume, defined as removed solute mass divided by initial serum concentration, was then obtained to compare efficiencies.

Results: As TMP in Group 3 rose promptly, CRRT could not be continued. In Group 1,2 and 4, median urea cleared volume was 10.7 dl (range, 5.5-12.1), 10.3 dl (10.0-10.3), and 16.5 dl (14.9-18.4) respectively. In Group 1, 2 and 4, median creatinine cleared volume was 11.0 dl (10.6-12.6), 9.7 dl (9.2-9.8), and 14.0 dl (13.5-16.4) respectively. Cleared volume of urea and creatinine in Group 4 was the greatest among all. Creatinine cleared volume was higher in Group 1 than in Group 2.

Conclusion: Post-dilution HF shows higher removal of solute than pre-dilution HF under identical conditions at low blood flow. For the benefit of solute removal, addition of dialysate flow to hemofiltration yields improved efficacy in CRRT.

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