

Publication Brief

Impact of extracorporeal blood flow rate on blood pressure, pulse rate and cardiac output during haemodialysis.

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BACKGROUND

Symptomatic (intradialytic) hypotension occurs in 15-30% of hemodialysis sessions due to a drop in blood pressure. Such hypotension is an independent predictor of cardiovascular morbidity and mortality. When patients experience intradialytic hypotension, it is common practice to reduce the extracorporeal blood flow rate, even though there is limited data on its effect. Reducing the extracorporeal blood flow rate in effect, reduces the efficacy of hemodialysis (Kt/V).

OBJECTIVE

To evaluate the effect of falling blood pressure during hemodialysis and the potential mechanism(s) involved by investigating the impact of changes in the extracorporeal blood flow rate on blood pressure, pulse rate and cardiac output in hemodialysis patients with arteriovenous-fistulas.

METHOD

- A randomized, crossover trial was performed in 22 hemodynamically stable hemodialysis patients older than 18 who had AV-fistulas;
- Following a hemodialysis session each patient was examined with extracorporeal blood flow rates of 200, 300 and 400 mL/min in random order;
- After 15 min, when steady state was achieved, cardiac output was measured at each extracorporeal blood flow rate by Transonic's HD03-CO Flow-QC® Hemodialysis Monitor.
- Blood pressure and pulse rate were also measured at each extracorporeal blood flow rate.

RESULTS

- The mean age of patients was 71 (± 11) years;
- Systolic blood pressure was significantly higher at an extracorporeal blood flow rate of 200 mL/min as compared with a rate of 300 mL/min, but not as compared with a rate of 400 mL/min;
- At an extracorporeal blood flow rate of 200, 300 and 400 mL/min, diastolic blood pressure, mean arterial pressure, pulse rates and cardiac output remained unchanged.

CONCLUSION

- No consistent trends in blood pressure changes by a reduction in the extracorporeal blood flow rate were demonstrated by the study.
- The study showed no support for a reduction in an extracorporeal blood flow rate when blood pressure falls during intradialytic hypotension.
- None of the patients experienced intradialytic hypotension.
- Further studies are required to evaluate the impact of changes in extracorporeal blood flow rates on blood pressure during intradialytic hypotension.

TAKE HOME

- Cardiac output was measured by the HD03-CO Monitor at the beginning and end of hemodialysis.
- Interesting Danish study.

REFERENCE

Schytz PA, Mace ML, Soja AM, Nilsson B, Karamperis N, Kristensen B, Ladefoged SD, Hansen HP, "Impact of extracorporeal blood flow rate on blood pressure, pulse rate and cardiac output during haemodialysis," *Nephrol Dial Transplant* 2015; 30(12): 2075-9. (Transonic Reference # HD11181AH)

