Publication Brief

Access flow measured during hemodialysis

OBJECTIVE
Hemodialysis accesses must supply adequate blood flow to perform hemodialysis and maintain access patency. Access flow (QA) is not measured routinely during hemodialysis.

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To evaluate whether access flow changes during hemodialysis; to determine which factors correlate with QA.

STUDY
• Subjects: 19 hemodialysis patients;
• Vascular access flow was measured by ultrasound dilution (QA-T) (Transonic HD01 Hemodialysis Monitor; Transonic Systems, Inc., Ithaca, NY) and duplex ultrasound, with time-domain correlation (QA-S) (Philips CVI) hourly during hemodialysis.
• Mean arterial pressure (MAP) (Fresenius automated blood pressure cuff) was also measured sequentially.
• Cardiac output (CO) (Transonic Hemodialysis Monitor) was measured sequentially.

RESULTS
• Mean and medium access flows was unchanged throughout the course of hemodialysis when measured by either method.
• Access flow measured by ultrasound dilution did fall 132 ±137 ml/min during the four hours of hemodialysis, but this was not statistically significant;
• Cardiac output fell 586 ±840 ml/min;
• MAP fell 11.9 +/- 13.0 mmHg (p < 0.01).
• There were small positive correlations between CO and QA (correlation coefficient (r) = 0.32, QA-T; r = 0.27, QA-S; p < 0.05), and between CO and MAP (r = 0.35; p < 0.01).

CONCLUSIONS
• Access flow rates obtained during hemodialysis by ultrasound dilution and duplex ultrasound were similar to those reported in the literature;
• Access flow, CO, and MAP decreased modestly during hemodialysis;
• Further studies are necessary to see if access flow is similar off dialysis, and whether in-line access flow measurements can decrease access thrombosis.

REFERENCES