Variation of intra-access flow early and late into hemodialysis.

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BACKGROUND
Intra-access flow (Qac), measured by ultrasound dilution, is a reliable surveillance method for access dysfunction. At the end of hemodialysis, circulating volume and blood pressure are decreased.

OBJECTIVE
To determine whether Qac could be significantly reduced when measured late into HD.

STUDY:
- 50 patients (32 male, 18 female) (mean age 64 ±14 years) were prospectively evaluated for variation in Qac early and late into HD.
- 33 native fistulae and 17 synthetic grafts.
- Six separate measures of Qac were performed for each patient by ultrasound dilution (Transonic HD01 hemodialysis monitor; Transonic Systems, Inc., Ithaca, NY): three within the first 30 minutes and three within the last 30 minutes of HD.
- Session time was 3.5 or 4 hours, and mean net ultrafiltration was 3.3 +/- 0.9 L/HD

RESULTS:
- Five patients had recirculation (17.2±10.9%). Their mean flow was 360±91.8 mL/min early in HD.
- Mean arterial pressure (MAP) decreased from 100.0 ±14.6 to 92.8 ±17.8 mm Hg from early to late HD.
- Heart rate decreased from 73 ±1 to 79 ±5 bpm from early to late HD.
- Hematocrit increased from 34 ±3 to 38 ±4% from early to late HD.
- For the whole group, mean Qac decreased from 1,101.7 ±566.7 to 972.5 ±515.6 mL/min (p = NS).
- When Qac was corrected for a MAP of 100 mm Hg, the reduction remained nonsignificant (from 1,101.7 to 1,048.0 mL/min).
- When considering native and synthetic fistulae separately, the drop in Qac was still nonsignificant (from 1,098.9 ±613.4 to 983.2 ±593.2 for native fistulae versus 1,107.2 ±480.5 to 999.8 ±379.8 ml/min for grafts).
- Overall, the percent reduction in Qac early versus late into HD was 11.7%, whereas it reached only 4.9% when access flows corrected for MAP were considered.

CONCLUSIONS
- Variation in Qac during HD is relatively small, especially when values are corrected for MAP. The variation can be considered non-significant for both native fistulae and synthetic grafts.
- Qac ultrasound dilution measurements made at any time during HD should be reliable for most patients.

REFERENCE
https://www.ncbi.nlm.nih.gov/pubmed/10926145 (Transonic Reference #: HD142A)