Publication Brief

Hemodialysis Arteriovenous Access: Detection of Stenoses and Response to Treatment by Vascular Access Blood Flow

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OBJECTIVE
1. To evaluate access flow thresholds in identifying venous outflow stenosis;
2. To confirm the relationship between AV access flow and AV access thrombosis;
3. To define the impact of intervention through percutaneous transluminal angioplasty (PTA) and surgery on access flow and access thrombosis.

STUDY
• Access blood flow measurements were performed monthly and following any intervention.
• Referral criteria: KDOQI Vascular Access Guidelines for AV grafts and fistulas: a decrease in access flow of 20% of flows below 1000 mL/min or an actual flow measurement of less than 600 mL/min.
• Accesses at risk were sent for venography with PTA performed on stenoses.
• PTA was considered a failure if access flow did not increase 20% or more.
• Thrombosed accesses were considered a study-ending event.
• 37 out of 42 dialysis patients were referred for intervention during the study period.

RESULTS
• 33 referrals resulted from a 20% decrease in flow under 1000 mL/min; 4 from an absolute measurement below 600 mL/min.
• 35 angiograms were performed; two patients opted to forego the treatment and thrombosed.
• All 35 evaluated had > 50% stenosis and received PTA. 14% of AV fistula and 21% of AV graft PTAs failed to restore flow.
• The thrombosis rate in this clinic dropped from 25% per patient/year, using dynamic venous pressures as the primary screening technique, to 16% per patient/year, during the access flow surveillance study.

CONCLUSION
Trends in access flow are as valuable as flow thresholds in identifying stenosis, while access flows not restored during intervention resulted in thrombosis. Successful PTA and surgical revisions restored access flows; however, consecutive interventions were steadily less effective.

The authors quote the U.S. Renal Data System, stating that access maintenance may account for 25% of the national ESRD system costs, making their finding that “monitoring with access flow has benefits beyond using dynamic venous pressure as a monitoring tool, especially in AV fistulae” significant to the dialysis community.

Reference: