Publication Brief

Vascular access surveillance: evaluation of combining dynamic venous pressure and vascular access blood flow measurements

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BACKGROUND
Vascular access thrombosis is one of the most morbid problems encountered by hemodialysis patients. In order to preserve a vascular access venous pressure (Vp) and vascular access blood flow (VABF) measurement surveillance protocols have been used.

OBJECTIVE
To evaluate combined dynamic Vp and VABF measurements in the identification of vascular access impairment. Also assessed was the effect of preventive repair on thrombosis rates in impaired vascular accesses identified by surveillance.

STUDY
• 86 chronic hemodialysis patients with a functioning vascular access were enrolled;
• Vascular accesses with greater than 50% of monthly Vp readings >120 mm Hg or VABF <500 mL/min in arteriovenous fistulas (AVFs) and VABF <650 ml/min in arteriovenous grafts (AVGs), or a decrease in VABF >25% compared to the highest previously measured value, were considered positive;
• Stenosis >50% on fistulography or a thrombotic event were defined as a ‘vascular access impairment episode’ while a stenosis <50% or the absence of a thrombotic event was defined as ‘no vascular access impairment episode’.
• Thrombosis rates and intervention rates were calculated per access year at risk.

RESULTS
• The sensitivity and specificity of the combined surveillance protocol for AVFs were 73.3 and 91%, respectively.
• In AVGs, sensitivity was 68.8% and specificity was 87.5%.
• The rate of thrombotic events was lower in patients who underwent early repair.
• The addition of dynamic Vp did not reduce the thrombosis rate any further than surveillance based on VABF alone.

CONCLUSION
Combined monitoring for surveillance of AVFs improved sensitivity but had little benefit in AVGs over VABF monitoring alone. Raising VABF cutoff levels might increase and improve identification of vascular access risk for thrombosis, but at the expense of lower specificity.

Reference