Publication Brief

Are Hemodialysis Access Flow Measurements by Ultrasound Dilution the Standard of Care for Access Surveillance? Yes

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BACKGROUND

This article reviews blood flow and other methods for access dysfunction screening, the techniques used to measure it and the predictability of access flow measurements in determining the presence of access stenosis and allowing successful intervention. Other technologies reviewed include differential conductivity, thermodilution (Frensenius), and hematocrit dilution (Critline). It also addresses the cost-effectiveness of such surveillance.

The authors first review the methods of screening for vascular access dysfunction in PTFE grafts and fistulae. Static and dynamic venous pressures are listed along with the advantages and disadvantages of dynamic venous pressures in PTFE grafts. They note that serial measurement of blood flow over time by one of many techniques is the preferred method of screening in PTFE grafts, whereas in AV fistulae, direct blood flow measurements are preferred for access surveillance.

The review gives an excellent history of the Krivitski Method® and indicator dilution technology. They list the advantages of the ultrasound dilution technique:

1) easy to use;
2) immediate answers;
3) accurate
4) can measure delivered blood flow;
5) can be integrated into the dialysis session.

They cite the disadvantages of indicator dilution technology as its expense, fragility and the requirement of nursing or technician time to take the measurements.

CONCLUSION

The reviewers conclude that their review of the various methods and their study of the comparisons support the concept that ultrasound indicator dilution is the current Gold Standard for measurement of vascular access recirculation and access flow and is the method of choice for monthly surveillance of vascular access grafts in adherence to NKF-K/DOQI guidelines. They report that available evidence would suggest that access flow measurements are the best tests currently available to screen for access dysfunction, and as preventative interventions, such as angioplasty and surgery, are successful, they should be regarded as the present standard of care. This would appear to be a cost-effective strategy.

TAKE HOME

This is an excellent paper to hand out to support, not only the need for vascular access monitoring to predict stenoses, but also to confirm Transonic® ultrasound dilution technology as the Gold Standard and method of choice for making the measurements.

Reference:

1 Garland JS, Moist LM, Lindsay RM, “Are Hemodialysis Access Flow Measurements by Ultrasound Dilution the Standard of Care for Access Surveillance?,” Advances in Renal Replacement Therapy 2002; 9(2) 91-98. (Transonic Reference # HD263A)