Access Flow and Central Hemodynamic during Hemodialysis (Methodology and Clinical Outcomes)

Nikolai Krivitski, Ph.D., D.Sc.

Transonic systems, Inc., NY, USA

Objectives

1. Hemodialysis Vascular Access - the source of patient morbidity and substantial fiscal burden.
2. A-V shunt as a physiological phenomena, what is normal?
3. Define goals of vascular access surveillance and accuracy speculations.
4. Guidelines in USA, Canada, Europe
5. Describe theory, limitations, and pitfalls of different techniques to measure intravascular venous pressure, access recirculation, and access blood flow.
6. Predictive power of access flow measurements.
7. Clinical Outcomes of Access Flow Surveillance

Content Description

The lecture will begin with discussion of the specific hemodynamic conditions and related problems in the artificially created A-V shunt in comparison with regular arteries and veins. Access flow range as a function of location, type, gender, and access condition will be presented. The definition of hemodynamically significant stenosis will be explained. The role of the vascular access dysfunction as a major source of hemodialysis patient morbidity will be addressed. The NKF K/DOQI and other countries guidelines and recommendations related to access flow monitoring and thresholds will be discussed and illustrated.

Theory and practical implementation of different dilution methods to measure access recirculation and access flow will be presented with major attention to accuracy and reliability of the results. Operator independence will be specially addressed as the main requirement of reliable measurement data considering the busy environment of the hemodialysis unit. Special attention will be paid to errors and pitfalls in vascular access surveillance. The role of intra-access venous pressure in access surveillance will be examined and compared with access flow surveillance. Relationship between access flow and access stenosis, thrombosis, economics and other outcomes of flow surveillance will be addressed. Implementation of surveillance program from surgical access placement to successful intervention by PTA will be analyzed. The development of a new catheter as a means to immediately measure the success of angio/surgical interventions to correct vascular access problems will be presented.