A randomized controlled trial of blood flow and stenosis surveillance of hemodialysis grafts.

Ram SJ, et al, Louisiana State Univ. Health Sciences Ctr., Shreveport, LA

BACKGROUND
Although the hypothesis that hemodialysis graft surveillance combined with correction of stenosis by preemptive percutaneous transluminal angioplasty (PTA) reduces thrombosis and prolongs graft survival is widely accepted, few randomized controlled trials have confirmed this hypothesis.

OBJECTIVE
To examine the widely accepted hypothesis stated above through a randomized controlled trial.

STUDY
• 101 patients were assigned to control (n = 34) group, flow (n = 32) group, or stenosis group (n = 35);
• Patients were followed for up to 28 months;
• All patients had monthly Qa measurements and percent stenosis measured quarterly by duplex UD;
• Referral for angiography was based on the following criteria:
  (1) In the control group: clinical criteria;
  (2) In the flow group: Qa <600 mL/min or clinical criteria; and
  (3) stenosis group, stenosis >50% or clinical criteria.
• Stenosis >or=50% during angiography was corrected by PTA.

RESULTS

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-emptive PTA Rate</th>
<th>% Grafts that Thrombosed</th>
<th>Two-year Graft Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (n=34)</td>
<td>0.22/patient year</td>
<td>47%</td>
<td>62%</td>
</tr>
<tr>
<td>Flow (Qa) (n=32)</td>
<td>0.34/patient year</td>
<td>53%</td>
<td>60%</td>
</tr>
<tr>
<td>Stenosis (n=35)</td>
<td>0.65/patient year, P &lt; 0.01</td>
<td>29%, P = 0.10</td>
<td>64%, P = 0.89</td>
</tr>
</tbody>
</table>

CONCLUSIONS
• Flow and stenosis surveillance were not associated with improved graft survival, although thrombosis was reduced in the stenosis group;
• Monthly flow and quarterly stenosis measurements were not accurate or timely indicators of risk of thrombosis or progressive stenosis;
• Study does not support the concept that flow or stenosis surveillance are superior to aggressive clinical monitoring.

REBUTTAL
In “A randomized controlled trial of blood flow and stenosis surveillance of hemodialysis grafts”, the authors Ram and Work, who incidentally are long-term proponents of the use of Duplex ultrasound, state that the rationale behind flow measurement in dialysis access depends on two assumptions:
1. Monthly flow measurements accurately predict thrombosis;
2. Timely intervention reduces thrombosis and prolongs graft life. (Continued on next side)

Reference:

A randomized controlled trial of blood flow and stenosis surveillance of hemodialysis grafts cont.

REBUTTAL CONTINUED

On the first assumption - the KDOQI guidelines call for measurements below a certain value or a drop over 25% over 4 months to a value below 1 L/min. In the study KDOQI guidelines were not followed; only low flows were screened for!

Also, one needs to look at flow measurement along with each patient’s clinical situation!

One second assumption, “timely intervention reduces thrombosis and prolongs graft life,” doesn’t pertain to surveillance. Surveillance technology, again, is not tied to prolonging access life which depends on the a successful intervention.

Since interventional success was not measured, it cannot be taken into account! It is also noteworthy that the study was performed at a university with an active interventional nephrology training program and a clinical team trained to use physical examination and prompt angiography/angioplasty to treat suspected problems.

The stenosis correction group strong tendency to improved outcomes suggests that the study supports access monitoring despite a design that was not adequately powered.