Dialysis Access in Failed Transplant Patients

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Disclosures

- Investigator: BARD, Otsuka, Shire, Gilead
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- Consultant: Covidien, Deltanoid

No disclosures for unlabeled or unapproved uses of technology

Late Referral

- We showed in a meta-analysis that there was an almost 2-fold increased risk of death and a significantly longer duration of hospital stay in patients referred late to nephrologists
- Astor, et al showed that patients with delayed referral to nephrologists prior to initiation of dialysis, were more likely to initiate with a chronic catheter and use one for longer periods of time compared to timely referral.
- There is compelling data showing that perhaps the higher mortality and hospitalization rates in the first year of dialysis are associated with late nephrology referral and initial vascular access use

Background

Based on the USRDS, 17,671 kidney transplants were performed in the U.S. in 2011. The overall graft failure rate among adult transplant recipients was 6.2 per 100 patient years in 2011, while the rate of failure requiring dialysis or re-transplantation was 3.1. Although long-term allograft survival has improved throughout the years, there are approximately 5000 patients with graft loss returning to dialysis each year. In these patients, there is a 3-fold higher adjusted risk of death as compared to patients with a functioning allograft.

Table 1

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th>1-year Follow-up</th>
<th>5-year Follow-up</th>
<th>10-year Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>51.4%</td>
<td>51.4%</td>
<td>51.4%</td>
</tr>
<tr>
<td>Age &gt;50 years</td>
<td>1.00 (ref)</td>
<td>1.02 (1.00-1.05)</td>
<td>1.02 (1.00-1.05)</td>
</tr>
<tr>
<td>IE</td>
<td>2.02 (1.93-2.11)</td>
<td>2.02 (1.93-2.11)</td>
<td>2.02 (1.93-2.11)</td>
</tr>
<tr>
<td>IE+1L</td>
<td>6.00 (5.90-6.10)</td>
<td>6.00 (5.90-6.10)</td>
<td>6.00 (5.90-6.10)</td>
</tr>
</tbody>
</table>

Data Source: Reference Tables F2, F14, US. Outcomes among recipients of a first-time deceased donor kidney transplant; unadjusted.
Background

- Djamali et al analyzed data on 1762 patients with CKD (N = 872) and RTR (N = 890) over 16 years, applying the new Kidney/Disease Outcomes Quality Initiative (K/DOQI) staging system for CKD
- The overall rate of creatinine clearance decline in patients with CKD was -6.6 ± 8.7 mL/min/year compared to -1.9 ± 0.7 mL/min/year in RTR (P < 0.0001).
- Overall kidney survival was higher in RTR compared to patients with CKD (49.6% vs. 17.2%, respectively, P < 0.001), patient survival was not statistically different between the two groups (74.7% vs. 80.3%, respectively, P = 0.25).


What is the initial access of choice in failed transplant patients?

- It should follow the KDOQI and FFCL guidelines, right??
- Followed by nephrologists in clinic
- Frequent labs
- ?Optimal meds/immuno
- ?Early referral for access

We showed in a preliminary report from our center that 41% of failed transplant patients were still dialyzing with a CVC at three months and only 16% were using an AVF


Baseline

- We examined data on 16,728 patients with a failed renal transplant and 509,643 patients with native kidney failure
- Patients initiating hemodialysis following a failed transplant were much younger than those with native kidney failure. They were also less likely to be female, had lower BMI, and generally had fewer comorbidities.
- Whereas 93.5% of those with a failed transplant had been under the care of a nephrologist, fewer than two-thirds (63.7%) of transplant naïve patients had (p<0.001). Only 50% had seen a nephrologist more than 6 months prior to initiating hemodialysis.

We analyzed data from the USRDS on all adult (age ≥18 years) incident end-stage renal disease (ESRD) patients initiating hemodialysis from January 1, 2006 to September 30, 2011.
- Relevant data were derived from the CMS Form 2728 and included demographics, insurance status, employment status, comorbidities, height and weight, initial dialysis modality, timing of nephrology referral, type of vascular access used,
Results

At the initiation of dialysis, 27.7% (n=4,636) of patients with a failed transplant used an AVF, 6.9% (n=1,146) used an AVG, and 65.4% (n=10,946) used a CVC.

Conversely, 80.8% (n=411,997) of patients with native kidney failure initiated dialysis with a CVC (p<0.001).

Among those with a failed transplant, predictors of CVC use included female sex (adjusted odds ratio [OR]=1.75; 95% confidence interval [CI]: 1.63, 1.87), lack of referral to a nephrologist (OR=2.00; 95% CI: 1.72, 2.33), diabetes (OR=1.14; 95% CI: 1.06, 1.22), peripheral vascular disease (OR=1.31; 1.16, 1.48) and being institutionalized (OR=1.53; 95% CI: 1.23, 1.89).

Factors associated with lower odds of CVC use included older age (OR=0.85 per 10 years; 95% CI: 0.83, 0.87), public insurance (OR=0.74; 95% CI: 0.68, 0.80), and current employment (OR=0.87; 95% CI: 0.80, 0.95).

Is there an urgency?

Perl, et al recently demonstrated in the Dialysis Outcomes and Practice Patterns Study (DOPPS) that as compared to transplant naïve patients on wait list, transplant failure patients on dialysis had higher all-cause mortality (aHR 1.32; 95% CI: 1.05 – 1.66) and especially higher infection-related mortality (aHR 2.45; 95% CI: 1.36 – 4.41) [22].

They showed that compared to transplant naïve patients, those with transplant failure were also less likely to use a permanent AV access, particularly within the first three months of initiating dialysis.

Why is there a reticence in initiating the vascular access work-up?

There may be a number of reasons some of which are psychological, such as a patient not wanting to “give up” on their kidney, or even a false sense of security from the physician who believes there are immunological factors to treat in order to prolong residual graft function.

Some surgeons may feel that placing an arteriovenous access may damage the transplanted kidney by diminishing renal blood flow.

Often, transplant nephrologists as well as patients could hope that a pre-emptive transplant may happen and even if they start on dialysis, the CVC will not be in for very long till re-transplantation happens.

Nevertheless, we believe that delaying the work-up for an arteriovenous access in these patients with failing transplants is comparable to not addressing their anemia, mineral bone disorders, hypertension or quality of life issues.
In summary

- Central venous catheters are still the most prevalent access type even in failed renal transplant patients.
- Our results emphasize the need for earlier recognition and acceptance of a failing renal transplant and need for earlier referral for access placement.
- Furthermore, clinical practice guidelines should also be established for patients with failing renal transplants as in CKD patients.