Transplanting the Highly Sensitized Patient

Cathi Murphey, PhD
Director, Histocompatibility and Immunogenetics Laboratory
Southwest Immunodiagnostics, Inc.
San Antonio
Highly Sensitized Patients

• Who are the highly sensitized patients?

• Who are the disadvantaged patients after KAS?
Transplant rate 35 times higher for CPRA 99.5-99.6 vs. CPRA 99.99+. 

UNOS/OPTN Data
Options for Transplanting the Highly Sensitized Patient

• Live Donor
  • Incompatible Donor
    • ABO incompatible
      • Desensitization for ABO incompatibility
    • HLA incompatible
      • KPD Exchange
      • Desensitization – with original donor
      • Desensitization – with KPD donor

• Deceased Donor
  • Wait
  • Desensitization

• Dialysis
ABO Incompatible Transplants

• Check for well HLA matched ABO incompatible donors

• Run Anti-A, Anti-B titers on all highly sensitized patients

• Change ABO type in software to AB if it doesn’t match for ABO titers
Example

• Pt. 15522
• cPRA – 100% (99.88) (no DP antibodies)
• ABO – A
• HLA  A3,24;B7,35 C4,7 DR1,01:03 DQ5 DPB1*04:01,02:01
• Anti-B DTT titer - <2   AHG - 8
• Donor
• ABO – B
• HLA  A3;B7 C4,7 DR1 DQ5 DPB1*04:02  (1 DP MM)
## Titer Data

<table>
<thead>
<tr>
<th>Date</th>
<th>DTT Titer</th>
<th>AHG Titer</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8/14</td>
<td>&lt;2</td>
<td>8</td>
</tr>
<tr>
<td>5/27/14</td>
<td>&lt;2</td>
<td>2</td>
</tr>
<tr>
<td>6/2/14</td>
<td>&lt;2</td>
<td>16</td>
</tr>
<tr>
<td>6/11/14</td>
<td>&lt;2</td>
<td>2</td>
</tr>
<tr>
<td>6/24/14</td>
<td>&lt;2</td>
<td>2</td>
</tr>
</tbody>
</table>

Pt. Transplanted 5/28/14
Titer – 16 on 6/2/14
Treated with Velcade
5 yr. post transplant – stable
KPD Exchange Option

- HLA incompatible
- Look for “least incompatible donor”
- Don’t over assign antibodies
- Do high resolution typing when necessary
- Subtype all A Blood group donors
Blood type O
Calculated PRA – **100% (99.96)**

HLA Antibodies –
A 1,2,3,11,30,31,32,33,34,36,66,68,69,74
B35,44,45,51,53,57,58,71,75,76,77,78,82
DR 7,8,9,11,12,13,14,15,16,17,18 DRw52 DQ 2,4,7

KPD Donor: A2,29 B56,61 C1,8 DR1,4 DRw53 DQ5,8

Perfect Class II Match!!

Pt. 07419 – on dialysis 14 years
Example

Only DSA – A2  A*02:06  3449 MFI
Flow Cytometry Crossmatch

- T cell  80 MCS (cutoff >85)
- B cell 103 MCA (cutoff >120)

- Crossmatch borderline but acceptable

- Pt. transplanted 7/17/2012
- 7 years post transplant
- No rejections – very stable – doing great!
KPD Exchange

• To date
  • 505 KPD transplants – **68 98-100% cPRA (13%) National Avg – 6% (2018)**
  • 7 98% cPRA
  • 19 99%
  • **42 100%  (8.3%)**

• 61 Desensitizations
  • 19 ABO
  • 42 HLA

<table>
<thead>
<tr>
<th>All Donor Types</th>
<th>To Date</th>
<th>2019</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>All CPRA</td>
<td>11,381</td>
<td>21,167</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>6,882</td>
<td>12,614</td>
<td></td>
</tr>
<tr>
<td>1-19</td>
<td>1,285</td>
<td>2,519</td>
<td></td>
</tr>
<tr>
<td>20-79</td>
<td>1,798</td>
<td>3,256</td>
<td></td>
</tr>
<tr>
<td>80-97</td>
<td>719</td>
<td>1,453</td>
<td></td>
</tr>
<tr>
<td>98-100</td>
<td>681</td>
<td>1,303</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>16</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

OPTN Data
Summary

• Find a Live Donor
• Look for all options – KPD, Desensitization (ABO, HLA), KPD with Desensitization
• Don’t over assign antibodies
• Do ABO A subtyping and ABO titers
• Consider low risk desensitization – ABO and HLA

• Deceased Donor options
• Desensitization? – IdeS, IVIG, Bela
Acknowledgement

• Dr. Adam Bingaman – Director, Abdominal Transplant Program
• Dr. Itai Ashlagi – KPD Database
• SWID lab – Awesome staff – do all the work!!