ABO Incompatible Direct Kidney Transplantation Using Glycosorb® Columns

Renal Transplant Symposium
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Renal Transplant Nurse Coordinator
Background

• Blood group incompatibility remains a major barrier in direct living kidney transplantation
• KPD, List Exchange (for blood group O recipients)
ABO Incompatible Kidney Transplant Across the Globe

- Belgium, 1982: first ABOi kidney transplant program was established
- Japan: plasmapheresis and double filtration plasmapheresis
- USA: plasmapheresis
- European centers: immunoadsorption columns (Glycosorb®)
  - Sweden, Germany, Italy
  - Also approved for use in Canada, UK, India, and Australia
Glycosorb® ABO Column v Plasmapheresis

- Plasmapheresis difficulties:
  - risk of infection
  - coagulation abnormalities
  - drug elimination

- Glycosorb ® specifically targets immunoglobulins with no substitution of fluid or plasma components
Glycosorb ® ABO Incompatible Living Donor Transplantation

• Option for blood group incompatible pairs
• Some donors refuse to, or can’t travel, therefore KPD not an option. Some pairs won’t/can’t wait
• Some pairs try a few KPD match cycles and if not matched, would then consider ABOi Tranplant using Glycosorb ® Columns
Glycosorb® A/B Column
Glycosorb® A/B Column
Patient Criteria

• Living kidney donor transplants
• Flow Crossmatch Negative
• Anti-A/B titres threshold (1:256)
• All combinations of ABO-incompatibilities may be transplanted except for a two-blood group antigen mismatch (i.e. donor AB and recipient O)
Glycosorb® ABOi Transplant

• Initial discussion/Required Consents
• Coordinate Logistics: Baseline Anti- A/B titres, A1 v A2, Initial FXM, schedule for: Rituximab, Glycosorb® Rx’s, IS, etc.)
• 15 cases to date, several in workup
Glycosorb® ABO Column

• St. Michael’s Hospital is the first center in North America to use Glycosorb® Columns in Living Donor Direct Kidney Transplantation

• Long term outcomes compare to those of standard living donor transplantation
## Pre-op Regimen

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Timing Prior to Transplant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rituximab 375 mg/m² IV x 1</td>
<td>1 Month</td>
</tr>
<tr>
<td>Immunoabsorption with Glycosorb®</td>
<td>3 daily treatments prior to transplant until IgG anti- A/B titres are ≤ 1:4</td>
</tr>
<tr>
<td>Immunosuppressants- Advagraf®, Myfortic®, Prednisone</td>
<td>7 Days</td>
</tr>
<tr>
<td>Simulect 20 mg IV X 1 and Methylprednisolone 2mg/kg IV x1</td>
<td>30 minutes -1 hour pre-op</td>
</tr>
</tbody>
</table>
## Post-op Regimen

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Timing Post Transplant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simulect 20 mg IV x 1 dose</td>
<td>Day 4</td>
</tr>
<tr>
<td>Immunosuppressives as per transplant protocol</td>
<td>As per transplant protocol</td>
</tr>
<tr>
<td>Titre measurement and Immunoadsorption with Glycosorb® (if necessary)</td>
<td>Titres: daily for the first week and on days 8, 10, 12, and 14.</td>
</tr>
<tr>
<td></td>
<td>Immunoadsorption if anti-A/B titres exceed 1:8 post-operatively in the first week and 1:16 in the second week</td>
</tr>
</tbody>
</table>
# Results

<table>
<thead>
<tr>
<th>Date of transplant</th>
<th>Donor/recipient ABO</th>
<th>Initial Anti A or B titre pre (Post-op titres)</th>
<th>Donor specific antibodies (DSA)</th>
<th>Number of pre-tx IA sessions</th>
<th>Number of post tx IA sessions</th>
<th>Serum Creatinine (umol/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11Aug2011</td>
<td>AB/A</td>
<td>1:4 (1:1)</td>
<td>No</td>
<td>2</td>
<td>0</td>
<td>163</td>
</tr>
<tr>
<td>14Feb2012</td>
<td>A1/O</td>
<td>1:32 (1:2)</td>
<td>Yes (historical)</td>
<td>3</td>
<td>1</td>
<td>114</td>
</tr>
<tr>
<td>24Apr2012</td>
<td>B/O</td>
<td>1:128 (1:4)</td>
<td>No</td>
<td>5</td>
<td>0</td>
<td>105</td>
</tr>
<tr>
<td>18Oct2012</td>
<td>A/O</td>
<td>1:32 (1:4)</td>
<td>No</td>
<td>3</td>
<td>1 (Double PLEX)</td>
<td>77</td>
</tr>
<tr>
<td>Not Tx’d</td>
<td>A/O</td>
<td>16</td>
<td>No</td>
<td>3</td>
<td>N/A</td>
<td>-----</td>
</tr>
<tr>
<td>31Jan2013</td>
<td>A/O</td>
<td>1:4 (0)</td>
<td>No</td>
<td>1</td>
<td>0</td>
<td>116</td>
</tr>
<tr>
<td>14Feb2013</td>
<td>AB/B</td>
<td>1:4 (1:1)</td>
<td>No</td>
<td>1</td>
<td>0</td>
<td>117</td>
</tr>
<tr>
<td>28May2013</td>
<td>B/O</td>
<td>1:8</td>
<td>No</td>
<td>2</td>
<td>0</td>
<td>159</td>
</tr>
<tr>
<td>11Feb 2014</td>
<td>B/A</td>
<td>1:4 (0)</td>
<td>No</td>
<td>1</td>
<td>0</td>
<td>108</td>
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<tr>
<td>Oct 2/14</td>
<td>B/O</td>
<td><strong>1: 512!!!</strong></td>
<td>No</td>
<td>5</td>
<td>0</td>
<td>159</td>
</tr>
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<td>Date of transplant</td>
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</tr>
<tr>
<td>Sept 18/14</td>
<td>A/O</td>
<td>64</td>
<td>No</td>
<td>5</td>
<td>1</td>
<td>180</td>
</tr>
<tr>
<td>Dec 11/14</td>
<td>A/O</td>
<td>64</td>
<td>No</td>
<td>3</td>
<td>0</td>
<td>107</td>
</tr>
<tr>
<td>Oct 22/15</td>
<td>A/O</td>
<td>16</td>
<td>No</td>
<td>3</td>
<td>0</td>
<td>87</td>
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<tr>
<td>Feb 2/16</td>
<td>A/B</td>
<td>32</td>
<td>No</td>
<td>5</td>
<td>0</td>
<td>98</td>
</tr>
<tr>
<td>Feb 25/16</td>
<td>B/O</td>
<td>64</td>
<td>No</td>
<td>3</td>
<td>0</td>
<td>79</td>
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</tbody>
</table>
References

• Reimann PM et al. Plasmapheresis: Technique and Complications. Intensive Care Med 1990;16:3-10
Thank You

QUESTIONS???
Acknowledgements

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Suela Cela - Social Work

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Mona Udit - Clerical Assistant

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Kevin Bradley - Nurse Coordinator
Sharon Lee - Social Work
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