An Introduction to Renal Transplantation
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Outline

• Assessment of patients for kidney transplantation
• Access to transplantation: listing, waiting, and re-assessment
• Post-transplant success
Kidney Transplant Population at St. Michael’s Hospital

Year

* July 1, 2017
SMH Transplant activity

Total, Living, Deceased
Goals of the Pre-transplant Assessment

• Determining if the patient is an appropriate candidate
• Adequately preparing the recipient
• Maximizing chances for success
• Detection and treatment of reversible medical conditions
• Determining peri- and post-transplant risks of complications
• “Playing the bad guy”
General Principles in Evaluation

• Primary goal is protecting patient health
• “Standards” vary
• Testing and evaluation process can be prolonged
• Some tests may need to be repeated
• Test results can become outdated
• Intervening illnesses can produce new requirements and assessments
Prior to the Clinic Visit

- Referral letter/note from nephrologist
- Assembly of chart
- Recent blood work and investigations
- Social work assessment
- Discussion between nurses
- Identification of potential live donors
- Other investigations
Contraindications to Transplantation

- Malignancy
- Severe heart, lung, or liver disease
- Peripheral vascular disease
- Severe obesity
- Severe mental illness
- Illicit substance abuse
- Non-compliance
- Inability to swallow
Evaluation for Transplantation

- Full history and physical examination
- Basic bloodwork: CBC, calcium, albumin, liver enzymes, PTH
- Infection status: HIV, HBV, HCV, CMV, EBV
- PSA, mammogram, Pap smear
- Chest x-ray
- Abdominal ultrasound and iliac Dopplers
- Kidney biopsy report
- Other consultant reports
Other Pre-Transplant Tests

• Cardiac testing: 2D echo. Stress test, ECG, coronary angiogram
• Non-contrast pelvic CT scan
• PPD
• Glucose tolerance test
• Sleep study
• Pharmacokinetic studies
"Of course it's 'used.'"
Waiting Times for a Deceased Donor Kidney Transplant

Standard criteria donor

- A: 4-5 years
- B: 7-9 years
- AB: 3-4 years
- O: 7-8 years

Extended criteria donor

- AB: < 1 year
- Others: 3-4 years
Paired exchange

Pair #1: “A” donor with “B” recipient
Pair #2 : “B” donor with “A” recipient
Paired Exchange-Principles

- Surgical pair at same hospital, emotional pair at different hospitals
- Near-simultaneous operations
- Reasonable equivalence in donor “quality”
- Ability to receive a live donor transplant, with shorter wait and possibility to avoid dialysis
- Work-up more complicated, confidentiality, possible different outcomes
Other Ways of Increasing the Organ Supply

• Domino exchange (national paired exchange)
• Extended criteria donor (ECD)
• Donation after cardiac death (DCD)
• ABO desensitization
• HLA desensitization
# SMH Monitoring Schedule

<table>
<thead>
<tr>
<th>Post-transplant Time</th>
<th>Clinic Visits</th>
<th>Bloodwork</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 month</td>
<td>Weekly</td>
<td>2 x week</td>
</tr>
<tr>
<td>1-3 months</td>
<td>Every 2 weeks</td>
<td>2 x week</td>
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<tr>
<td>3-6 months</td>
<td>Monthly</td>
<td>Weekly</td>
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<tr>
<td>6-12 months</td>
<td>Every 3 months</td>
<td>Monthly</td>
</tr>
<tr>
<td>12-24 months</td>
<td>Every 6 months</td>
<td>Every month</td>
</tr>
<tr>
<td>&gt;24 months</td>
<td>Every 12 months</td>
<td>Every 3 months</td>
</tr>
</tbody>
</table>
My topic today is "rejection".
Some Common Transplant Drugs
(Anti-Rejection Drugs, or Immunosuppressants)

- Prednisone
- Azathioprine (imuran)
- *Cyclosporine (Sandimmune, Neoral)
- Mycophenolate mofetil (Cellcept)
- Tacrolimus (Prograf, Advagraf, FK506)
- *Basiliximab (Simulect) and daclizumab (Zenapax)
- ATG (thymoglobulin)
- Sirolimus (Rapamune)
- *Mycophenolic acid (Myfortic)
Common Post-Transplant Issues

- Delayed graft function
- Acute rejection
- Wound infection and dehiscence
- Other infections
- Hypertension, high cholesterol, diabetes
- Heart disease
- Osteoporosis
- Chronic transplant rejection
- Malignancy
- Recurrence of original kidney disease
Residents of the Philippine slum district of Bagong Lupa show their scars from kidney operations. Donors in poverty-stricken areas often part with their organs for paltry sums and for many, resulting health problems mean they have little to show for their sold organs except for the scars.
Infectious and Surgical Complications

- 52% opportunistic infections
- 38% pyelonephritis including multi-drug resistant *E. coli*
- 23% CMV
- 19% fungal infections
- 14% tuberculosis
- 5% cerebral abscess
- 5% spinal abscess
- 25% wound infection
- 10% allograft nephrectomy
- 10% wound dehiscence
- 10% lymphocele
- 5% obstructive hydronephrosis
- 5% urine leak
- 5% metastatic cancer
Figure 1: Graft Survival (Death Counted as Loss)

Prasad et al, Kidney Int 2016
Figure 2: Graft Survival (Death as Censoring Event)

Prasad et al, Kidney Int 2016
Success of Transplantation

- Most kidney transplants will be successful
- Improved quality and quantity of life
- Regular follow-up and compliance are extremely important
- There is maximum replacement of kidney function, but it is never normal
- As with dialysis, it has its own set of advantages and disadvantages
- It is not for everybody
- If you have been referred for transplantation, chances of eventual listing and success are quite good
Thank you!

Questions