Should Obese Patients Be Offered a Kidney Transplant?

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Outline

1. Impact of obesity on outcomes in the general population and in patients with ESKD

2. Variables impacting survival among obese patients on dialysis and after kidney transplantation

3. Novel approaches to the transplantation and post-transplant care of obese patients with kidney disease
Case

- 48 year old woman with proteinuric ESKD who has been on hemodialysis for 5 months presents for transplant evaluation
  - PMH – hypertension, proteinuria
  - ROS – sedentary, can walk 1 block/1 FOS without dyspnea
  - SH – lives with her husband, 4 children, nonsmoker
  - FH – no kidney disease
- Physical exam
  - BP 158/78, Height 5'3", Weight 256 pounds, BMI 43.8
  - Significant abdominal obesity, trace LE edema bil, 2+ distal pulses bil, R IJ dialysis catheter
- Data review
  - Labs consistent with ESKD
  - Echo – LVEF 55%, moderate diastolic dysfunction, normal RV function, no valvular abnormalities, normal pulmonary pressure
  - Stress test – negative for inducible ischemia
- Would you list this patient for kidney transplantation?
- Should she lose weight before listing? If so, how, and how much?
In 2015, 603.7 million adults were obese (12% prevalence) and the prevalence of obesity has doubled in > 70 countries. High BMI accounted for 4.0 million deaths globally that year. Disease burden related to obesity has increased, but the rate of increase has slowed.

Can We Trust BMI to Measure Obesity?

The relationship between BMI and body fat is impacted by age, gender, ethnicity, physical activity -> doesn’t gauge risk equally across populations.

BMI is an inaccurate indicator of nutritional status/body composition among dialysis patients.
The Obesity Paradox in Advanced CKD

- Unclear which component of BMI is associated with the greater survival
- Changes in body composition more strongly associated with mortality than isolated BMI

Kalantar-Zadeh K et al. Kidney Int Reports 2017

The Obesity Paradox in Advanced CKD

- Obesity is a risk factor for incident CKD, yet it protects against CKD-associated death

Kalantar-Zadeh K et al. Kidney Int Reports 2017
The Malnutrition-Inflammation-Cachexia Syndrome

- Common to see excess adiposity + muscle wasting “sarcopenic obesity”
- Obesity may attenuate the magnitude of PEW -> protect against downstream effects

Potential Mechanisms of Obesity Survival Advantage in CKD

- Obese patients may be protected from the development of PEW in the context of malnutrition due to greater reserves

- The short-term protection that obesity provides against wasting may appear to outweigh the harmful longer term effects of obesity on cardiovascular outcomes in a population with a short life expectancy
So what is a nephrologist to do?

- Up to 50% of patients with ESKD are obese
- Targeting high BMI levels is not necessarily recommended
- Preservation of muscle mass + reduction of excess body fat is ideal
  - Intradialytic resistance training
- Weight loss is associated with worse post-transplant outcomes
  - Harhay MN et al. AJKD 2019, Molnar MZ et al. AJT 2011
- Intentional weight loss may be required for transplant eligibility, with unclear impact

Survival with ESKD

- Patients with advanced CKD have an annual mortality rate of 10-20%
- Once dialysis is initiated, range of expected remaining lifespan is approximately 8 years (ages 40-44) and 4.5 years (ages 60-64)
- Similar to rates in malignancy

Survival following transplant indisputably superior to dialysis

US Renal Data System 2018 Annual Data Report
Obesity as a Barrier to Transplantation

- Wide variability in interpretation and application of existing guidelines regarding obese patients’ suitability for transplantation
- Historic concerns about outcomes for obese patients -> persistent disparities in access

**Figure 1.** Registration for the kidney transplant waiting list, by year and BMI category.

**Figure 2.** Time to transplantation, by BMI, for candidates who were registered for KT.

Survey of 67 US transplant centers
- No universally accepted BMI criterion
  - Range 35-45 to initiate evaluation
- Poor follow-up re: weight loss success
  - 30% success rate

- Inactive status is a common designation for obese patients on the waiting list as they attempt to lose weight

Pondrom S AJT 2012
Huang E et al. Transplantation 2014