Introduction

- Simultaneous pancreas-kidney transplant (SPKT) offers the best long-term outcomes for type 1 diabetes mellitus associated with end-stage kidney disease.
- As more diabetic patients present for transplant evaluation at older ages and with higher comorbidity burdens, frailty and impaired functional status have become important considerations in clinical assessment and management.
- The Karnofsky Performance Score (KPS), a categorical assessment tool for functional impairment, has been commonly used for many chronic disease assessments.
- We sought to characterize the associations of KPS with patient survival in a large national cohort of U.S. SPKT candidates and recipients.

Methods

- We examined national Scientific Registry of Transplant Recipients (SRTR) registry data for 16,822 patients listed for SPKT in the U.S. (2006-2019).
- Functional status was categorized by center-reported KPS as: normal (80-100); cares for self (70); requires assistance (50-60); or disabled (10-40).
- We assessed associations of functional status at listing and transplant with subsequent patient survival, adjusted for baseline patient and transplant factors.
- We also explored time-dependent associations (adjusted hazard ratio, aHR) of SPKT with survival risk after listing compared with continued waiting in each functional status group by multivariable Cox regression, partitioned by time <30 days and >30 days of SPKT.

Results

- KPS distributions among candidates (N=16,822) and recipients (N=10,316), respectively, were: normal, 62.0%, 57.8%; capable of self-care, 23.5%, 24.7%; requires assistance, 12.4%, 14.2%; and disabled, 2.1%, 3.3%.
- There was a graded increase in mortality after listing and after transplant with lower functional levels. Compared with mortality after SPKT for patients with normal functioning, mortality rose progressively (Figure 1) for patients capable of self-care (aHR, 1.00-1.18), requiring assistance (aHR, 1.23-1.47), and disabled (aHR, 1.10-1.55).
- In time-dependent regression, compared with waiting, SPKT was associated with 2-fold mortality risk within 30 days of transplant. However, beyond 30 days, SPKT was associated with reduced mortality, from 52% for disabled patients (aHR, 0.26-0.48) to 70% for patients with normal functioning (aHR, 0.27-0.33) (Figure 2).

Limitations

- Retrospective design limits ability to objectively confirm reported KPS.
- Patients with decreased functional status who were listed and underwent transplant may be selected based on clinical information not included in the registry, these results may not be generalizable to all patients with lower KPS values.

Conclusions

- While lower functional status is associated with increased mortality risk among SPKT candidates and recipients, SPKT can provide long-term survival benefit across functional status levels in those selected for transplant.