The Influence of Recipient Smoking Status on Pancreas Transplant Survival and Morbidity

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Background & Aims

- Transplant recipients have a marked increased risk of premature cardiovascular mortality and malignancy in comparison with the general population.
 - especially diabetic patients being considered for pancreas transplant.
- In kidney transplantation, recipient smoking is associated with an increased risk of death and graft loss.
 - Surprisingly little is known about the impact of smoking following pancreas transplant.
- In an era of organ shortage, identifying patients at risk of early graft loss is vital to aid appropriate allocation.
- We therefore aimed to examine the impact of recipient smoking status on pancreas transplant graft and patient survival.

Methods

- Retrospective data on all UK pancreas transplants from 1984-2015 was obtained from NHSBT UK transplant registry, n=2161.
- Inclusion Criteria:
 - First simultaneous Pancreas Kidney Transplant
- Smoking status was classified as non, current or ex-smoker.
- Unadjusted graft and patient survival was calculated using Kaplan-Meier plots and compared using the log-rank test.
- Multivariate analysis was performed using Cox proportional hazards regression including the following parameters:
 - Recipient age
 - Recipient BMI
 - Mismatch grade
 - Dialysis status pre-transplant
 - Donor Type (DCD vs DBD)
 - Donor age
 - Donor BMI
 - Warm ischaemic time
 - Cold ischaemic time
 - % sensitisation

Results

Median graft survival was 1114 (0-5171) days (3 years), median patient survival was 1409 (0-9380) days (3.8 years).

Figure 1: Kaplan-Meier plots reveal no significant difference in graft or patient survival between smoking status groups. Graft survival p=0.568, patient survival p=.651

The effect of recipient age was analysed in more detail and revealed significantly higher mortality in those recipients over 55 years of age who smoked (p =0.001)

Figure 2: Kaplan-Meier plots survival analysis of smoking status stratified by recipient age.

Multivariate analysis: upon adjustment for confounding variables smoking status remained non significant. Graft survival HR 0.9 (95% CI 0.6-1.3, p=0.7). Patient survival HR 1.5 (95% CI 0.8-3.1, p=0.3). Prolonged cold ischaemic time, recipient BMI, recipient age, donor age, haemodialysis pre transplant and non favourable HLA mismatch were the most predictive significant variables associated with diminished graft and patient survival.

Variable	Graft Survival			Patient Survival		
	HR	95% CI	P value	HR	95% CI	p-value
Cigarette smoker	0.884	(0.527, 1.481)	0.639	1.542	(0.778, 3.057)	0.214
Recipient BMI	1.047	(1.007, 1.089)	0.021	1.001	(0.961, 1.063)	0.675
Mismatch grade	0.798	(0.382, 1.668)	0.548	2.173	(1.037, 4.555)	0.040
Haemodialysis pre-tx	1.127	(0.777, 1.633)	0.529	1.872	(1.127, 3.110)	0.015
Donor age	1.011	(0.999, 1.024)	0.075	1.021	(1.004, 1.039)	0.017
Cold ischaemic time	1.001	(1.000, 1.001)	<0.001	1.00	(1.000, 1.001)	0.112

Figure 3: Multivariate survival analysis table of significant variables compared to smoking status.

Conclusion

- Recipient smoking status does not influence overall graft or patient survival following simultaneous kidney pancreas transplant.**
- However, there are a cohort of patients for which smoking at the time of transplant is associated with a higher mortality or diminished graft survival.**
- Smoking over the age of 55 may be considered a relative contraindication to pancreas transplantation.**

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