Pre-transplant histological assessment provides a useful predictor of subsequent kidney allograft function

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Introduction

- Organ shortage is a major challenge in transplantation
- Marginal donors are increasingly used
- Remuzzi score (RS) is a histological assessment of renal grafts comprising glomerular, tubular, interstitial and vascular components
- Remuzzi score require validation as a predictive tool
- This retrospective observational study sought to investigate remuzzi scores as a predictor of allograft function

Methods

- Retrospective observational study at Addenbrookes Hospital, Cambridge
- All time zero and pre-implantation biopsy's of deceased donor kidneys (both DCD and DBD) with an a remuzzi score
- January 1st 2010-31st August 2016
- Patient outcomes:
 - 1 year death censored graft survival
 - 1 year eGFR

Results

- 495 transplanted deceased donors kidneys with a wide distribution of RS

Graft survival

Unadjusted 5 year death censored graft survival stratified by Remuzzi Score:

- Unadjusted 1 and 5 year graft survival was similar regardless of the donor kidney
- We speculate that this may be due to masking of long term outcomes due to inclusion of recent transplants.
- There is a reduced rate of primary non function in recipients of kidneys of RS ≥5 compared to our previous study (Mallon et al, AJT 2015)

Graft function

1 year eGFR was significantly better in those who received a kidney with a lower remuzzi score

RS	0-1 (n= 171)	2 (n=81)	3 (n=127)	4 (n=84)	5-7 (n=32)
1 year eGFR (median (IQR))	57.9 (40.7-77.3)	45.2 (33.1-58.5)	42.3 (31.5-57.1)	45.9 (34.0-53.7)	35.4 (30.0-52.9)

•**Left panel** – 1 year eGFR by Remuzzi score in single kidney transplant recipients, p<0.01

•**Right panel** – 1 year eGFR grouped RS (<4 and ≥ 5) are significantly different (effect size 12ml/min, p =0.02). One year eGFR of recipients of deceased donor kidneys with a RS ≥5 was worse than those with a RS <5

Conclusion

- Recipients of kidneys with a RS≥5 had comparable graft survival at one year to those with a RS<5
- RS is effective at predicting one year eGFR in deceased donor renal allografts
- Transplanted single kidneys with a RS of 4 had good graft function at 1 year
- Some kidneys with a score of >5 have reasonable outcomes, highlighting the need for additional biomarkers to improve prediction of subsequent function
- A multi-centre randomised clinical trial is required to further validate this approach

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