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Transplantation of Kidneys from Donors with Acute Renal Failure

Five-Year Results from Double Center Experience

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Abstract

Background: Transplantation of kidneys from deceased donors with acute renal failure (ARF) has been described and represents an underutilized source of renal grafts. We reviewed retrospectively our double center experience with transplantation of ARF donor kidneys.

Methods: Between January 2009 and June 2014, we performed a total of 397 kidney transplants at the two hospitals. Of which, 65 came from donors with ARF. The outcome was compared with 62 expanded criteria donor kidneys and 270 standard criteria donor kidneys. ARF was defined as donor terminal creatinine higher than 2. All kidneys from ARF donors had acceptable biopsies and were pumped. The immunosuppression was similar in all three groups (Thymoglobulin for induction and Prograf, Cellcept and steroids for maintenance). The outcome measurements included recipient serum creatinine, patient and graft survival at 6 months, 1 year and 3 years. We also reviewed the delayed graft function (DGF) rates and cold ischemic time in all groups.

Results: Mean donor creatinine was 3.84±1.3. The 6 month, 1 and 3 year patient survival rates were 98.5%, 96.8% and 92.0% in ARF group, 98.1%, 97.0% and 93.4% SCD group and 98.4%, 93.2% and 77.7% in ECD group. The 6 month, 1 and 3 year death censored graft survival was 96.9%, 96.9%, 96.9% in ARF group, 97.7, 96.5, 91.8 in SCD group and 95.1%, 93.2%, 90.1% in ECD group. The mean 6mo, 1 year and 3 year recipient creatinine was 1.49, 1.46 and 1.51 in ARF group, 1.61, 1.72 and 1.77 in SCD group and 1.91, 1.92 and 2.15 in ECD group, respectively. ARF kidneys are noted to be associated with more DGF (58.5% in ARF group VS 41.5% in non ARF group), longer cold ischemic time (857.79 min in ARF group vs 589.32 min in non ARF group) and younger donor age (32.25 years in ARF group vs 40.65 years in non ARF group).

Conclusion: Elevated terminal donor creatinine is not a risk factor for graft loss after deceased donor kidney transplantation. Although there is increased risk of DGF and longer cold ischemic time, transplantation of ARF kidneys provides comparable short and long term graft function and patient survival compared to kidneys from non ARF donors.

Background

- Transplantation of kidneys from deceased donors with acute renal failure (ARF) has been described and represents an underutilized source of renal grafts
- We retrospectively reviewed our double center experience with transplantation of ARF donor kidneys

Methods

- 397 kidney transplants were performed from January 2009- June 2014 at TJUH and LMC
- 65 kidney grafts came from donors with ARF
- Outcome was compared with 62 expanded criteria donor (ECD) kidneys and 270 standard criteria donor (SCD) kidneys
- ARF was defined as donor terminal Creatinine > 2 mg/dl
- All kidney grafts from ARF donors had acceptable biopsies and were placed on machine perfusion pump
- Immunosuppression was similar in all three groups:
 - Induction: Thymoglobulin, steroid
 - Maintenance: Tacrolimus, MMF, steroids
- Outcome measurements included:
 - Recipient serum Creatinine
 - Delayed graft function (DGF) rates
 - Patient and graft survival rates at 6 months, 1 year and 3 years
- Cold ischemic times (CIT)

Results: Donor and Recipient Characteristics

	ARF	Non ARF	P-value
Donor Age (years)	32.3	40.7	<0.005
Terminal Donor Cr (mean)	4.20	0.97	<0.005
CIT (min)	857.8	589.3	<0.005
DGF (%)	58.5	41.5	<0.005

Results: Recipient Outcomes

Patient Survival (%)	ARF	SCD	ECD
6 months	98.5	98.1	98.4
1 year	96.8	97.0	93.2
3 years	92.0	93.4	77.7
Graft Survival (%)			
6 months	96.9	97.7	95.1
1 year	96.9	96.5	93.2
3 years	96.9	91.8	90.1
Recipient Creatinine (Mg/dl)			
6 months	1.49	1.61	1.91
1 year	1.46	1.72	1.92
3 years	1.51	1.77	2.15

Conclusions

- Elevated terminal donor Creatinine is not a risk factor for graft loss after deceased donor kidney transplantation
- Although there is increased risk of DGF and longer CIT, transplantation of ARF kidneys provides comparable short and long term graft function and patient survival compared to kidneys from non-ARF donors

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