Comparison of heart transplant outcomes from domino and deceased heartbeating donors in the UK

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On behalf of the UK Transplant Cardiothoracic Advisory Group

NHS
UK Transplant

Aim

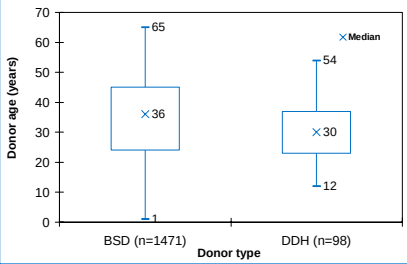
The domino donor heart (DDH) is not subject to the potential injurious sequelae of brain stem death (BSD). As this could positively affect early and late graft survival, we compared patient outcomes for DDH and hearts from BSD donors in UK heart transplantation.

Methods

- Data were obtained from the National Transplant Database.
- 1,569 (1471 BSD and 98 DDH) orthotopic first heart only transplants in the UK,1 April 1995 to 31 March 2003.
- Adult transplants only (≥16 years at time of transplant).
- Kaplan-Meier patient survival (short and medium-term).
- Exploratory data analysis assessed differences in donor and patient factors for the two groups. Factors considered:
  - Donor and patient age
  - Donor and patient gender
  - Donor and patient blood group
  - Ischaemic time
  - Patient cause of death.

Demographic differences

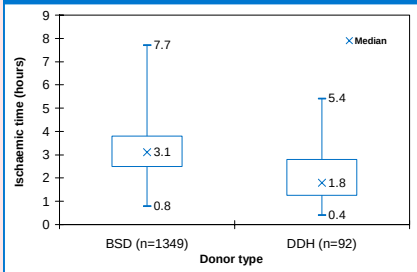
Donor age



- BSD donors were significantly older than their DDH counterparts.

Mann-Whitney p-value = 0.0013

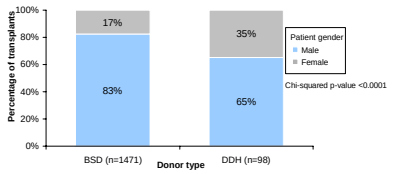
Ischaemic time



- BSD transplants had significantly longer ischaemic times than their DDH counterparts.

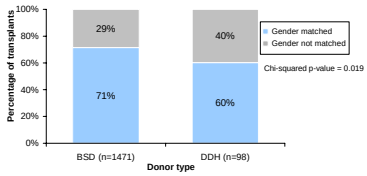
Mann-Whitney p-value <0.0001

Patient gender



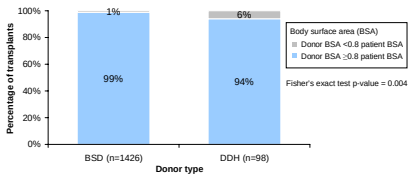
- BSD patients more likely to be male than DDH patients.

Gender matching



- Higher proportion of BSD transplants were gender matched.

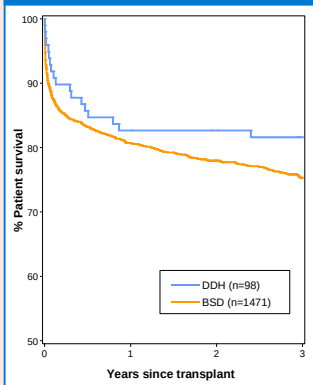
Size matching



- A higher proportion of BSD donors were size matched to ≥0.8 patient BSA.

Survival

Kaplan-Meier patient survival



Patient survival	Donor type	Patient survival estimate(%)	95% CI	Log-rank p-value
30 day	BSD	88	86 – 89	0.22
	DDH	92	86 – 97	
1 year	BSD	81	79 – 83	0.57
	DDH	83	75 – 90	
3 year	BSD	75	73 – 77	0.17
	DDH	82	74 – 89	

- Both short and medium-term patient survival estimates were comparable for the two groups.

Patient cause of death

Period	No. of deaths	Patient cause of death: Rejection	Cardiac death (non-rejection)	Other	Fisher's exact p-value
0 - 30 days					
BSD	180	2	117	61	0.01
DDH	8	0	1	7	
31- 365 days					
BSD	104	4	33	67	0.14
DDH	9	2	2	5	
366 – 1096 days					
BSD	74	1	34	39	-
DDH	1	0	0	1	

- Patient cause of death differed between the two groups, for patients dying within 30 days of transplant.
- A higher proportion of early deaths were due to non-rejection cardiac causes in the BSD group.

Conclusions

- Older donor age and longer ischaemic time are known to increase the risk of patient death following heart transplant.
- Despite a younger donor age and shorter ischaemic times, short and medium-term patient survival following domino heart transplant was similar to that from deceased heartbeating donors.
- Patient cause of death differed between DDH and BSD for patients dying within 30 days of transplant.
- Further investigations are underway to determine the effect of donor and patient factors on the outcome from DDH and BSD donor heart transplants.