Donor heart dysfunction and graft survival in liver and kidney transplants

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Livers and kidney transplants from donors with left ventricular dysfunction by echocardiography have normal short- and long-term graft survival, suggesting that these organs can be safely transplanted

BACKGROUND

The primary aim of this study was to investigate the association between acute donor left ventricular heart dysfunction, and liver and kidney recipient outcomes.

Transplantation is the ultimate treatment for end-stage kidney and liver failure, showing 1- and 5-year graft survival rates of 85%–95% and 75%–85%, respectively. Acute LV dysfunction (left ventricular ejection fraction (LVEF) < 50%, and/or the presence of left ventricular regional wall motion abnormalities (RWMA)), secondary to the catecholamine surge that occurs with brain herniation, is fairly common in organ donors. Moreover, with an increased demand for grafts, the donor criteria have been extended to include older donors (>70y) and donors with other comorbidities. These factors combined may lead to decreased perfusion of potential liver and kidney grafts.

The effect of donor acute heart failure in liver and kidney trans-plantation has not been exclusively evaluated previously. Hence this study will show how donor heart dysfunction may affect recipient outcomes and thus help increase availability of organs. Moreover, we can link graft survival with other donor and recipient characteristics.

METHODS

All donors considered for liver and kidney donation with echocardiographic records at Sahlgrenska University Hospital between 2006 and 2016 were matched with their recipients through the Scandiatransplant register. The studied outcomes were graft survival, re-transplantation, and recipient death. Kaplan-Meier curves were used to plot time to event. Multivariate Cox-regression was used to test independence.

Table 1. Odds Ratio (OR) of 90-day death or graft loss in liver and kidney recipients with grafts from donors with LV dysfunction.

	Liver			Kidney		
	OR	95 % CI	p-value	OR	95 % CI	p-value
LV Dysfunction	1.43	0.65 – 3.11	0.374	3.245	0.8 – 13.2	0.1
Ejection Fraction (EF)	0.98	0.95 – 1.01	0.202	0.961	0.91 – 1.01	0.161
LV EF < 50%	1.33	0.58 – 3.08	0.501	3.366	0.74 – 15.33	0.117
RWMA*	1.22	0.51 – 2.93	0.661	1.806	0.16 – 20.47	0.633

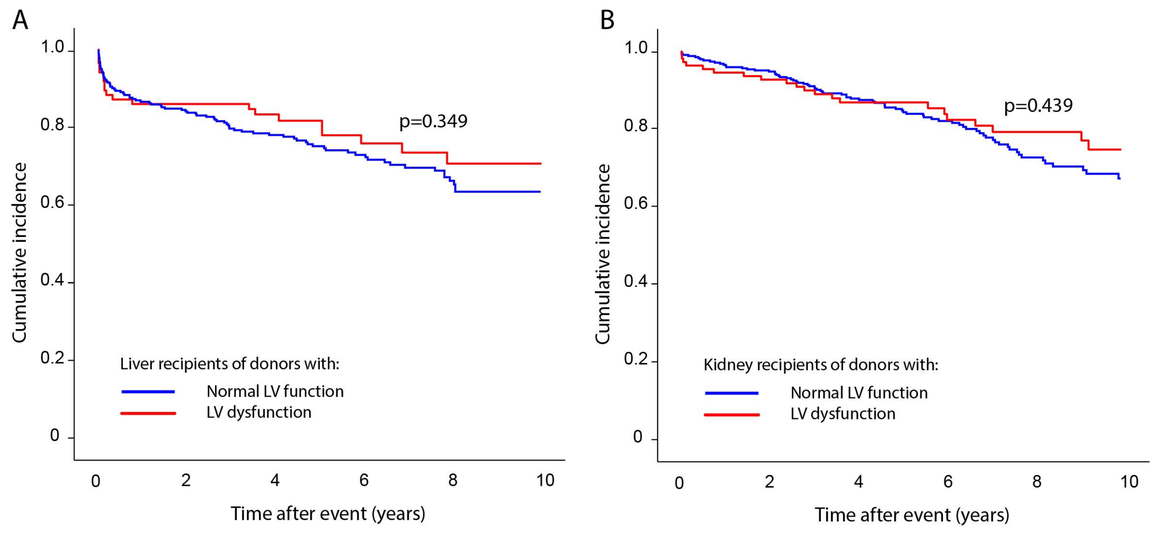

Figure 1. Kaplan-Meier curves on graft survival in liver *p*=0.231 (A) and kidney *p*=0.439 (B) recipients depending on donor heart status; normal LV function (blue) and LV dysfunction (red).

RESULTS

There were 370 liver donors and 312 kidney donors (matched with 458 recipients) with echocardiographic records at Sahlgrenska University Hospital between June 2006 and November 2016. Of patients with LV dysfunction there were 102 liver- and 72 kidney donors. Univariate survival analyses showed no statistical difference in the short- (**Table 1**) and long-term (**Figure 1**) graft survival from donors with LV dysfunction compared to donors without. Donor age > 65 years, recipient re-transplantation and recipient liver tumour were predictors of worse outcome in liver transplants ($p<0.05$). Donor age > 65, donor hypertension, recipient re-transplantation, and a recipient diagnosis of diabetes or nephritis/glomerulonephritis had a negative association with graft survival in kidney transplants ($p<0.05$).

CONCLUSIONS

We found no significant association between donor LV dysfunction and short- and long-term graft survival in liver and kidney transplants, suggesting that livers and kidneys from such donors can be safely transplanted.

ADDITIONAL KEY INFORMATION

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There was no conflict of interest. Research reported in this publication was partly funded by the Swedish federal government under the ALF agreement (ALFGBG-775041)

WCE WORLD CONGRESS OF EPIDEMIOLOGY 2024

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