COMBINED LIVER AND KIDNEY TRANSPLANTATION – A SINGLE CENTER EXPERIENCE

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INTRODUCTION AND AIMS

Chronic kidney disease is a dangerous complication after orthotopic liver transplantation (OLT) and is associated with increased morbidity and decreased survival.

CKD has been reported to occur in 4 – 80% of OLT recipients, depending on criteria used to define CKD and duration of follow-up. Renal dysfunction pre OLT is the major determinant of OLT outcome, and poor renal function predicts decreased survival. Indeed, renal dysfunction pre OLT is one of the risk factors for this problem.

Assessment of renal function pre OLT is mandatory to all candidates, and combined kidney-liver transplant (KLTx) can be used in patients with failure of both organs.

The aims of this study were to evaluate the renal and patient survival after combined liver-kidney transplant (LKTx), and perform a critical analysis of the results

POPULATION AND METHODS

We performed an observational retrospective data review of all 12 patients who underwent simultaneous KLTx in our Unit, between January 2002 and January 2012, using the piggy back technique, with partial cava clamping. Liver allografts were whole organ. All grafts (liver and kidney) were obtained from the same deceased donors, except in one patient that received a liver from a live donor with FAP.

We recorded age; gender; race; etiology of liver and renal disease; MELD score and renal function (Scr) at transplantation; requirement for renal replacement therapy pre or post-transplant; diabetes, hypertension, hepatitis B and C virus; HLA mismatches; immunosuppression; rejection episodes; renal, hepatic and patient survival; and cause of death (when applicable). At the end of the follow up, renal function was classified according to the K/DIGO Clinical Practice Guidelines

RESULTS

12 LKTx recipients:

- 6 males; all caucasian
- Mean age: 48.8±11.5 years
- Hepatitis C virus in 4 patients
- Mean MELD score 17.3±6.9
- Mean Scr 3.3±1.7 mg/dl; 8 were on dialysis before KLTx
- Mean HLA mismatches were 5±0.8. Mean donor age 34.3±20.9 years.
- Mean follow up time 31.3±28.3 months

INDICATIONS FOR LIVER-KIDNEY TRANSPLANTATION

PATIENT	GENDER	AGE	INDICATIONS FOR OLT	CAUSE OF CKD
1*#	Female	60 yrs	FAP	CKD 5D - amyloidosis
2*#	Female	59 yrs	Cirrhosis – unknown cause	CKD 5D – unknown cause
3	Male	46 yrs	FAP (graft chronic rejection)	CKD 5D – calcineurin toxicity
4*#	Male	28 yrs	Hepatitis C	CKD 5D – IgA nephropathy
5	Male	53 yrs	Hepatitis C (with HCC)	CKD 5D - ADPKD
6#	Male	32 yrs	Hemochromatosis	CKD 5D – MPGN type I
7	Male	64 yrs	Hepatitis C and alcohol	CKD 5D – chronic glomerulonephritis
8*#	Female	37 yrs	FAP	CKD 3B - amyloidosis
9*#	Male	57 yrs	Hepatitis C and alcohol	CKD 3B – diabetic nephropathy
10#	Female	52 yrs	Portal hypertension	CKD 5D - ADPKD
11	Female	54 yrs	Portal hypertension	CKD 5D - ADPKD
12	Female	44 yrs	Portal hypertension	CKD 5 - ADPKD

Yrs – years; FAP – familial amyloidotic polineuropathy; CKD – chronic kidney disease; HCC – hepatic celular carninoma; ADPKD – autossomic dominant policytic disease; MPGN – membranoproliferative glomerulonephritis

- ❖ hepatic and renal indication (n=7);
- ❖ predominantly hepatic indication (n=2);
- ❖ predominantly renal indication (n=3).

* death
# kidney loss

IMMEDIATE POST-TRANSPLANT PERIOD

Delayed graft kidney function

ATN in 5 patients (patients 1, 3, 4, 7, 9)

Dialysis in 3 patients (patients 1, 4, 9)

All died

(1.3±1.2 months)

LONG TERM FOLLOW-UP PERIOD

MORTALITY

SEPSIS: n= 3

Hepatitis C / CKD 3B IgA nephropathy

Hepatitis C with HCC / CKD 5D ADPKD

Hepatic and kidney failure of unknown cause

STROKE: n=1

FAP / CKD 5 amyloidosis

CACHEXIA: n=1

FAP / CKD 3B amyloidosis

Organ- rejection episodes

- No acute liver rejections episodes
- 1 vascular kidney graft rejection (8months):
  - Unkown cause of hepatic and kidney failure
  - Immunosuppression switch (Sirolimus) for Kaposi
  - Died after 2 months in dialysis and with septic shock

Lost of kidney grafts

- Death with a non-functioning graft 4
- Death with a functioning graft 1
- Disease recorrence in the graft 1
- Donor diabetic nephropathy 1

Functioning kidney grafts – 41.7%

Scr 1.5±0.5 mg/dl

(27.6±26 months)

DISEASE SEVERITY AND CLINICAL OUTCOMES DEPENDING ON INDICATIONS FOR LKTx

	HEPATIC / RENAL INDICATIONS	HEPATIC INDICATIONS	RENAL INDICATIONS	p
MELD	20.5±4.5	8±2.8	16.3±3	0.05
Scr	9.3±2 mg/dl	1.9±0.4 mg/dl	8.2±3.1 mg/dl	0.007
Bilirrubin	1.6±1.5 mg/dl	1±1.2 mg/dl	0.5±0.2 mg/dl	NS
NIR	1.1±0.6	1.1±0.4	0.4±0.8	NS
ATN	n=4	n=1	0	NS
Kidney loss	n=4	n=2	n=1	NS
Death	n=3	n=2	0	NS
Follow-up	27.2±30.6 months	18±24 MONTHS	50±23.1 months	NS

MELD score is unable to differentiate between candidates with severe hepatic failure and normal renal function and candidates with CKD and well preserved liver function. Perchance the MELD score may not be the most appropriate tool for the selection of candidates for liver transplant, and the *delta* MELD score should be evaluated.

MELD – Model for End Liver Disease;
Scr – Serum creatinine;
NIR – normalised international ratio;
ATN – acute tubular necrosis;
NS – non-statistic

CONCLUSIONS

These results require a reflection on candidates and indications for double transplantation. The shortage of organs and the bad results (death and kidney loss) cast doubt on the usefulness of simultaneous transplantation in the "very ill" patients (ie, patients with severe hepatic failure and clinically unstable), some of which may recover renal function. Sequential transplantation can be a good option in selected patients.

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