

OUTCOMES OF PEDIATRIC LIVER TRANSPLANTATION, COMPARISON BETWEEN ACUTE AND CHRONIC LIVER FAILURE SETTINGS

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BACKGROUND

Managing children suffering from acute liver failure (ALF) is a dynamic process. Listing them for liver transplantation (LT) is considered when the probability of spontaneous recovery is low. Children with ALF who meet criteria are eligible for super urgent transplantation, the window between presentation and LT can range between few hours up to few days. The dynamics are different in case of children with end stage chronic liver disease (ESCLD) who are transplanted electively as candidates are usually in less critical condition.

AIM OF THE WORK

To compare long-term recipient and graft survival as well as complication rates between children transplanted for either ALF or ESCLD.

METHODS

This is a retrospective review of primary LT recipients in Leeds Teaching Hospitals NHS trust. Patients were divided into either ALF or ESCLD group according to their listing indication and the following parameters were compared: Pre-transplant recipient parameters, donor parameters, operative parameters & outcomes.

RESULTS

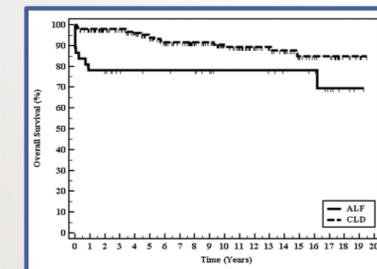
Children undergoing re-transplantation, transplants for liver tumors or metabolic diseases without underlying liver disease were excluded (90 LTs). Our database showed 232 primary LTs between 2000 and 2020 with the following distribution: 195 elective LTs for ESCLD & 37 super-urgent LTs for ALF. Recipients' age and weight were significantly higher in ALF group. Most common indication for LT in ESCLD group was biliary atresia while seronegative hepatitis was the most common indication in ALF group. Time on transplant waiting list was significantly shorter for ALF group.

Regarding pre-transplant location, home location was higher in ESCLD group while hospital and PICU location were significantly higher in ALF group. In terms of the source of the graft, living donors were significantly higher in the ESCLD group (34 donors) than ALF group where no living donors were used. There was no statistically significant difference between both groups in terms of rejection and vascular complications while biliary complications showed significantly higher bile leak rates in the ESCLD group. Post-transplant survival was significantly higher in the ESCLD group as 1-,5- and 10 years survival rates for ESCLD group were 97.9%, 93.9%, 89.4%, 85.0% respectively while survival rates in ALF recipients during the same period were fixed at 78.3% (P=0.007). Graft survival was longer in the ESCLD group but the difference was not statistically significant.

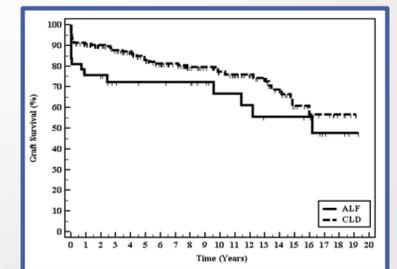
Comparison between ALF and ESCLD groups

Parameter	ALF group (n=37)	ESCLD group (n=195)	P
Recipient gender			
• Male	16 (43.2%)	102 (52.3%)	0.312
• Female	21 (56.8%)	93 (47.7%)	
Recipient age at transplant (years)			
Median (Min. - Max.)	8.8 (0.1 - 16.7)	2.5 (0.3 - 17.2)	0.031
Recipient Weight (kg)			
Median (Min. - Max.)	25.5 (2.7 - 66.5)	12.5 (4.7 - 89)	0.011
Waiting time(days)			
Median (Min. - Max.)	3 (1-41)	60.5(1-560)	<0.001
Graft type			
• Graft variant	23 (62.2%)	155(79.4%)	0.016
• Whole graft	14 (37.8%)	38 (19.4%)	
• Missing	0	2(1.2%)	
Donor gender			
• Male	45.7%	46.9%	0.902
• Female	54.3%	53.1%	
Donor weight (kg)			
Median (min-max)	67 (8 - 90)	68 (10 - 98)	0.912
Donor age (years)			
Median (Min. - Max.)	39 (0.9 - 65)	29.5 (1 - 66)	0.039
Vascular complications			
• AV malformation post liver biopsy	0 (0%)	1 (0.5%)	FEp=1.000
• Massive retroperitoneal hematoma from femoral vein bypass cannula.	0 (0%)	1 (0.5%)	FEp=1.000
• HAS	2 (5.4%)	13 (6.7%)	FEp=1.000
• PVS	0 (0%)	14 (7.2%)	FEp=0.134
• HAT	1 (2.7%)	10 (5.1%)	FEp=1.000
• PVT	1 (2.7%)	7 (3.6%)	FEp=1.000
• HVS	1 (2.7%)	0 (0%)	FEp=0.159

Parameter	ALF group (n=37)	ESCLD group (n=195)	P
Biliary complications			
• CHD sludge	0 (0%)	2 (1%)	FEp=1.000
• Biliary stricture	3 (8.1%)	21 (10.8%)	FEp=0.775
• Bile leak	0 (0%)	23 (11.8%)	FEp=0.031
Rejection	17 (45.9%)	62(31.8%)	0.096
Cause of graft loss	(n = 5)	(n = 27)	
• HAT	0 (0%)	9 (33.3%)	FEp=0.288
• PNF	2 (40%)	5 (18.5%)	FEp=0.296
• Chronic rejection	3 (60%)	6 (22.2%)	FEp=0.121
• Biliary tract complications	0 (0%)	7 (25.9%)	FEp=0.560
Cause of death	(n = 9)	(n = 17)	
• Unknown	0 (0%)	5 (29.4%)	FEp=0.129
• Cardiopulmonary	3 (33.3%)	1 (5.9%)	FEp=0.104
• Cerebral oedema	1 (11.1%)	0 (0%)	FEp=0.346
• Fungal infection	1 (11.1%)	0 (0%)	FEp=0.346
• Gastro-intestinal	0 (0%)	1 (5.9%)	FEp=1.000
• Intra-cranial hemorrhage	1 (11.1%)	0 (0%)	FEp=0.346
• Liver Failure	1 (11.1%)	4 (23.5%)	FEp=0.628
• Recurrence of disease	0 (0%)	1 (5.9%)	FEp=1.000
• Sepsis	2 (22.2%)	5 (29.4%)	FEp=1.000



Figure(1): Recipient survival curves for both groups



Figure(2): Graft survival curves for both groups

SUMMARY

We studied 195 elective LTs for patients with ESCLD and 37 super-urgent LTs for ALF patients. Recipients in ALF group were significantly older and heavier. Vascular complications and rejection rates did not show significant difference between two groups while bile leak was significantly higher in the ESCLD group. Patient survival was significantly higher in ESCLD group while graft survival did not show significant difference between two groups.

CONCLUSION

Post LT survival in ALF patients is significantly inferior to ESCLD patients.