PREDICTORS OF PATIENT AND GRAFT SURVIVAL FOLLOWING PEDIATRIC LIVER TRANSPLANTATION: LONG-TERM ANALYSIS OF MORE THAN 300 CASES FROM SINGLE CENTRE

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Background As a result of improved outcomes, referral to pediatric liver transplant (PLT) services has gradually increased but unfortunately graft pool did not show similar expansion resulting in graft shortage. Identifying the pre-transplant predictors of patient and graft survival can help in more effective graft allocation and can be crucial in guiding medical care and re-listing decisions.

Aim Identifying pre-transplant factors that can by itself or in combination predict post-transplant patient and graft survival.

Methods This is a retrospective review of PLT episodes in Leeds Teaching Hospitals NHS trust from 2000 to 2020. Univariate and Multivariate analysis of pre-transplant factors were used to identify predictors of patient and graft survival. We classified aetiology of liver disease into 6 broad categories: End stage chronic liver disease (ESCLD), Acute liver failure (ALF), acute on top of ESCLD, metabolic liver disease, tumours and re-transplantation. Grafts used were divided into whole and technical variant grafts where technical variant grafts include all split and reduced grafts, technical variant grafts were further divided into grafts from cadaveric or living donors (LD).

Results 276 patients in our centre received 320 LTs. ESCLD was the main indication (60.6%) followed by re-transplantation (13.7%), ALF (10.3%), tumours (8.8%), metabolic (5.3%) and acute on top of ESCLD (1.3%). Source of liver grafts were DBD donors in 271 (84.7%) transplant episodes while 49 grafts (15.3%) were from living donors. Number of grafts per patient was one graft in 276 patients (86.2%), two grafts in 39 patients (12.2%) and three grafts in 5 (1.6%) patients. Recipients who required pre-transplant mechanical ventilation were 24 (7.5%) recipients 0.44 (13.8%) patients required re-transplantation. Most common cause of graft loss was hepatic artery thrombosis (HAT) in 13 re-transplants (29.6%). At the end of study, 239 (86.6%) recipients survived while 37 (13.4%) died. Most common cause of death was sepsis. Univariate analysis for patient survival (table 1) showed that following variables had a significant ($p < 0.05$) impact on overall patient survival: patient age, patient weight, patient height,

Abstract P42 Table 1 Univariate cox regression analysis of risk factors for death and graft loss after PLT

	Patient death		Graft Loss	
	p	HR (95% C.I.)	p	HR (95% C.I.)
Age in years				
0 – 5 months	0.538	1.471 (0.430 – 5.025)	0.138	2.075 (0.790 – 5.446)
6 – 11 months	0.002*	0.095 (0.022 – 0.411)	0.056	0.525 (0.272 – 1.016)
1 – 4 year	0.002*	0.246 (0.102 – 0.593)	0.004*	0.398 (0.212 – 0.750)
5 – 12 year	0.040*	0.415 (0.179 – 0.962)	0.229	0.683 (0.367 – 1.272)
≥13 year (reference)		1.000		1.000
Gender/Female	0.805	1.085 (0.569 – 2.067)	0.785	1.064 (0.681 – 1.664)
Graft type				
Whole (reference)		1.000		1.000
Technical variant	0.003*	0.355 (0.179 – 0.704)	0.081	0.642 (0.390 – 1.057)
Technical variant LD	0.115	0.413 (0.138 – 1.239)	0.240	0.631 (0.293 – 1.360)
Category				
ESCLD (reference)		1.000		1.000
ALF	0.003*	3.361 (1.492 – 7.569)	0.049*	1.867 (1.003 – 3.476)
ALF on top of ESCLD	0.986	–	0.619	1.654 (0.227 – 12.034)
Tumor	0.096	2.339 (0.861 – 6.351)	0.990	0.995 (0.424 – 2.335)
Metabolic	0.972	–	0.425	0.562 (0.136 – 2.318)
Re-transplantation	0.261	1.706 (0.672 – 4.330)	0.674	1.153 (0.595 – 2.233)
Donor age				
1 – 17 year (reference)		1.000		1.000
0 – 5 months	0.981	–	0.973	–
18 – 49 year	0.218	0.617 (0.286 – 1.331)	0.352	0.771 (0.446 – 1.333)
>50 year	0.538	1.368 (0.504 – 3.711)	0.455	1.336 (0.624 – 2.861)
Location				
Home (reference)		1.000		1.000
Hospital	0.857	1.076 (0.487 – 2.378)	0.514	1.203 (0.690 – 2.099)
PICU	0.438	1.413 (0.590 – 3.388)	0.058	1.797 (0.981 – 3.294)
Weight (kg)

Abstract P42 Figure 1 Patient Kaplan-Meier survival curve **Figure 2:** Graft Kaplan-Meier survival curve

Abstracts

<5	0.032*	3.812 (1.125 – 12.912)	0.024*	3.340 (1.174 – 9.502)
≥5 – 10	0.001*	0.140 (0.042 – 0.471)	0.072	0.589 (0.330 – 1.049)
≥10 – 20	0.077	0.479 (0.212 – 1.083)	0.174	0.665 (0.369 – 1.198)
>20 (reference)		1.000		1.000
Height				
≤Mean	0.001*	0.223 (0.096 – 0.519)	0.042*	0.594 (0.360 – 0.982)
>Mean (reference)		1.000		1.000
Donor-recipient gender mismatch	0.643	1.170 (0.603 – 2.272)	0.878	0.964 (0.605 – 1.536)
Transplant episode	0.458	1.320 (0.634 – 2.750)	0.868	1.049 (0.600 – 1.832)
Donor recipient weight ratio	0.687	0.982 (0.897 – 1.074)	0.774	1.009 (0.950 – 1.071)
Warm ischemia time (min)	0.427	1.014 (0.980 – 1.049)	0.163	1.018 (0.993 – 1.043)
Cold ischemia time	0.821	1.014 (0.899 – 1.144)	0.871	1.007 (0.927 – 1.093)
Year of surgery				
Before 2005 (reference)		1.000		1.000
2005 – 2010	0.295	0.674 (0.322 – 1.411)	0.242	0.726 (0.425 – 1.242)
After 2010	0.004*	0.254 (0.101 – 0.638)	0.001*	0.381 (0.211 – 0.687)
Invasive ventilation	0.012*	2.899 (1.268 – 6.631)	0.061	1.894 (0.972 – 3.691)

Abstract P42 Table 2 Multivariate cox regression analysis of risk factors for death and graft loss after PLT

	Patient death		Graft Loss	
	p	HR (95%C.I.)	p	HR (95%C.I.)
Age in years				
0 – 5 months	0.943	6541.074 (0.0 – 1.8×10^{108})	0.239	5.143 (0.336 – 78.712)
6 – 11 months	0.949	2555.491 (0.0 – 7.0×10^{107})	0.622	1.693 (0.209 – 13.731)
1 – 4 year	0.204	0.273 (0.037 – 2.023)	0.484	0.591 (0.135 – 2.581)
5 – 12 year	0.088	0.370 (0.118 – 1.160)	0.439	0.733 (0.334 – 1.609)
≥13 year(reference)		1.000		1.000
Graft type				
Whole(reference)		1.000		–
Technical variant	0.705	1.229 (0.423 – 3.573)		–
Technical variant	0.085	4.663 (0.810 – 26.858)		–
LD				
Category				
CLD (reference)		1.000		1.000
ALF	0.639	0.709 (0.168 – 2.985)	0.400	0.618 (0.202 – 1.895)
ALF on top of CLD	0.984	0.000 (–)	0.976	0.000 (–)
Tumor	0.160	2.477 (0.700 – 8.769)	0.929	1.044 (0.404 – 2.697)
Metabolic	0.948	0.000 (0.0 – 2.7×10^{130})	0.391	0.415 (0.056 – 3.100)
Re-transplantation	0.853	1.128 (0.315 – 4.044)	0.131	0.467 (0.173 – 1.255)

Weight(kg)				
<5	0.951	0.001 (0.0 – 1.582×10^{101})	0.778	0.627 (0.024 – 16.179)
≥5 – 10	0.932	0.001 (0.0 – 7.352×10^{99})	0.567	0.581 (0.090 – 3.739)
≥10 – 20	0.965	1.037 (0.208 – 5.172)	0.425	1.524 (0.542 – 4.287)
>20 (reference)		1.000		1.000
Height				
≤Mean	0.847	0.838 (0.140 – 5.019)	0.552	0.656 (0.163 – 2.634)
>Mean (reference)		1.000		1.000
Year of surgery				
Before 2005 (reference)		1.000		1.000
2005 – 2010	0.430	0.695 (0.281 – 1.716)	0.619	0.855 (0.461 – 1.585)
After 2010	0.003*	0.112 (0.027 – 0.471)	0.015*	0.397 (0.188 – 0.836)
Invasive ventilation	0.492	1.637 (0.402 – 6.672)	0.237	1.877 (0.662 – 5.324)

HR: Hazard ratio C.I: Confidence interval LL: Lower limit UL: Upper Limit *: Statistically significant at $p \leq 0.05$

graft type, category, era of transplant and invasive ventilation. Univariate analysis for graft survival showed that the following variables had a significant ($p < 0.05$) impact on graft survival: patient age, patient weight, patient height, category, and era of transplant. Multivariate statistical analysis of Patient and graft Survival showed that the only significant factor for graft and patient survival is the era of transplant where patients transplanted after 2010 has significantly higher recipient and graft survival.

Summary This study, spanning over about 20 years, represents one of the biggest UK based PLT single centre reports. Only significant factor for patient and graft survival was era of transplant with PLT after 2010 has significantly better patient and graft survival.

Conclusion Building experience has substantial effect on patient and graft survival. Traditional view of worse outcomes of smaller candidates should be changed especially in high volume centres with prolonged experience.

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PROVISION OF BIOLOGICS IN SECONDARY CARE SETTING 5 YEARS ON: HOW ARE WE DOING? A SERVICE EVALUATION OF CURRENT COHORT INCLUDING PATIENT FEEDBACK

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Introduction/Background Treatment with anti-TNF α agents for paediatric patients with moderate to severe IBD has received increasing regulatory approvals since 2006. Treatment with Adalimumab and Infliximab was made available at Milton Keynes University Hospital, a secondary care setting in the Thames Valley region, following design of a shared care protocol in 2016. The service is resourced by local PeGHAN Consultant, Community Nursing team, Day Care unit and Pharmacy provisions supported by tertiary clinicians.