

Liver transplantation in hepatic hydrothorax is associated with a greater survival benefit compared to other complications of cirrhosis

Karim T. Osman, MD ¹, Amir A. Qamar, MD ^{2,3}

¹ Department of Internal Medicine ² Division of Gastroenterology ³ Division of Transplant and Hepatobiliary Diseases, Lahey Clinic

Introduction

Hepatic hydrothorax (HH) is an important complication of portal hypertension. Treatment is associated with high recurrence, morbidity, and mortality rates. To date, liver transplant (LT) is the best treatment modality.

Aims

We aim to assess the survival benefit LT has on patients with HH.

Methods

- Study Design**
- A prospectively maintained cohort of adult patients with cirrhosis, being evaluated for LT, was retrospectively reviewed from 2015-2020
- Statistical Methods**
- Primary endpoint was death. Subjects were followed from the time of LT (baseline) until last follow up or death. Censoring occurred at the last follow-up or death, whichever occurred earlier. Cox proportional hazard regression modelling was used to identify associations between covariates and outcomes.
 - The cumulative incidence of outcomes was determined by the Kaplan-Meier method
 - The Years Saved due to LT was evaluated by comparing patients who were on waiting-list but did not receive a LT with patients who ultimately received a LT. This was done by calculating the area under the Kaplan-Meier curve. This was done individually for both HH and non-HH groups.

Results

- A total of 992 were evaluated for LT. 115 (11.6%) had HH
- Patients with HH had higher rates of decompensation represented by ascites and hepatic encephalopathy (HE) (Table 1)
- Median survival of patients with and without HH were 0.66 and 0.94 years, respectively (Figure 1)
- HH remained significant in predicting mortality after adjusting for other covariables (HR 1.42, 95% Confidence Interval 1.14-1.79; P-value 0.002) (Table 2)
- LT thus offered an added survival benefit of 0.19 years at the 1-year timepoint in patients with HH as compared to the non-HH group (Figure 2).
- When comparing the entire cohort, HH patients with a MELD score of >15 identified patients with worse survival (with a median survival of 0.61 years), followed by patients with HH and MELD ≤15 (with a median survival of 0.66 years) followed by patients without HH and MELD >15 (with a median survival of 0.69 years) (P-value <0.001) (Figure 3)

Table 1. Baseline characteristics of the cohort

Variables	HH (n=115)	No HH (n=877)	P-value
Age (years)	58.08 (52.81-62.87)	58.40 (50.90-63.77)	0.72
Female	49 (42.61%)	309 (35.23%)	0.12
MELD	19.50 (14.00-24.00)	13.00 (10.00-20.00)	0.79
Ascites	96 (83.48%)	305 (34.78%)	<0.001
Hepatic Encephalopathy	72 (62.61%)	335 (38.20%)	<0.001
Variceal hemorrhage	21 (18.26%)	104 (11.86%)	0.06
HCC	19 (16.52%)	186 (21.21%)	0.24
SBP	23/96 (23.96%)	104/305 (34.10%)	0.06

Results

Table 2. Univariable and multivariable analysis of prognostic factors associated with mortality

Variables	Univariable		Multivariable	
	HR (95% CI)	P-value	HR (95% CI)	P-value
HH	1.62 (1.31-2.00)	<0.001	1.42 (1.14-1.79)	0.002
Age	1.00 (1.00-1.01)	0.22		
Female	0.94 (0.80-1.11)	0.47		
Ascites	1.32 (1.13 - 1.55)	<0.001	0.94 (0.77-1.14)	0.54
Hepatic encephalopathy	1.54 (1.31-1.79)	<0.001	1.39 (1.18-1.64)	<0.001
Variceal hemorrhage	0.94 (0.75-1.19)	0.61		
HCC	0.72 (0.60-0.88)	<0.001	0.82 (0.67-0.99)	0.04
SBP	1.49 (1.21-1.84)	<0.001	1.28 (1.01-1.63)	0.04
MELD	1.03 (1.02-1.04)	<0.001	1.03 (1.02-1.04)	<0.001

Figure 1. Kaplan Meier curve comparing survival in patients with and without HH

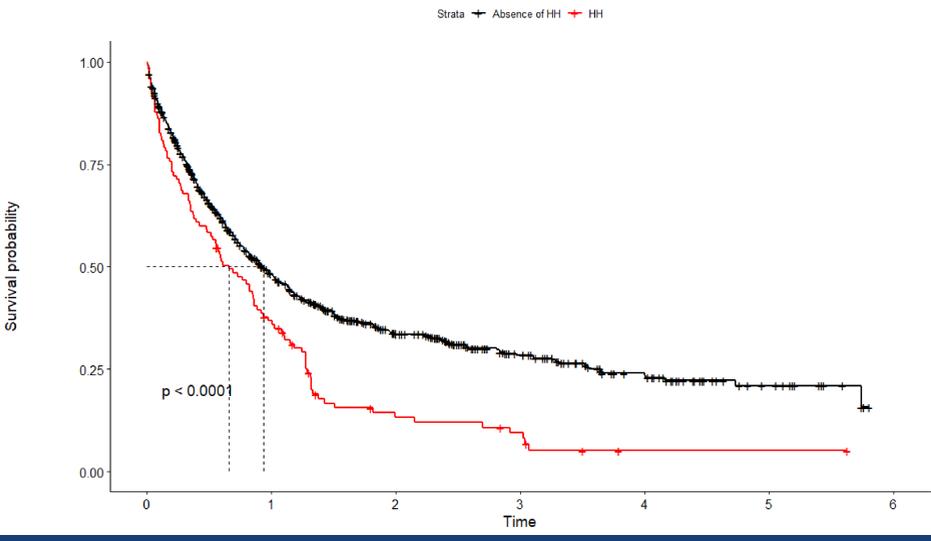


Figure 2. Survival curves demonstrating the life-time expectancy based on presence/absence of hepatic hydrothorax and transplant status

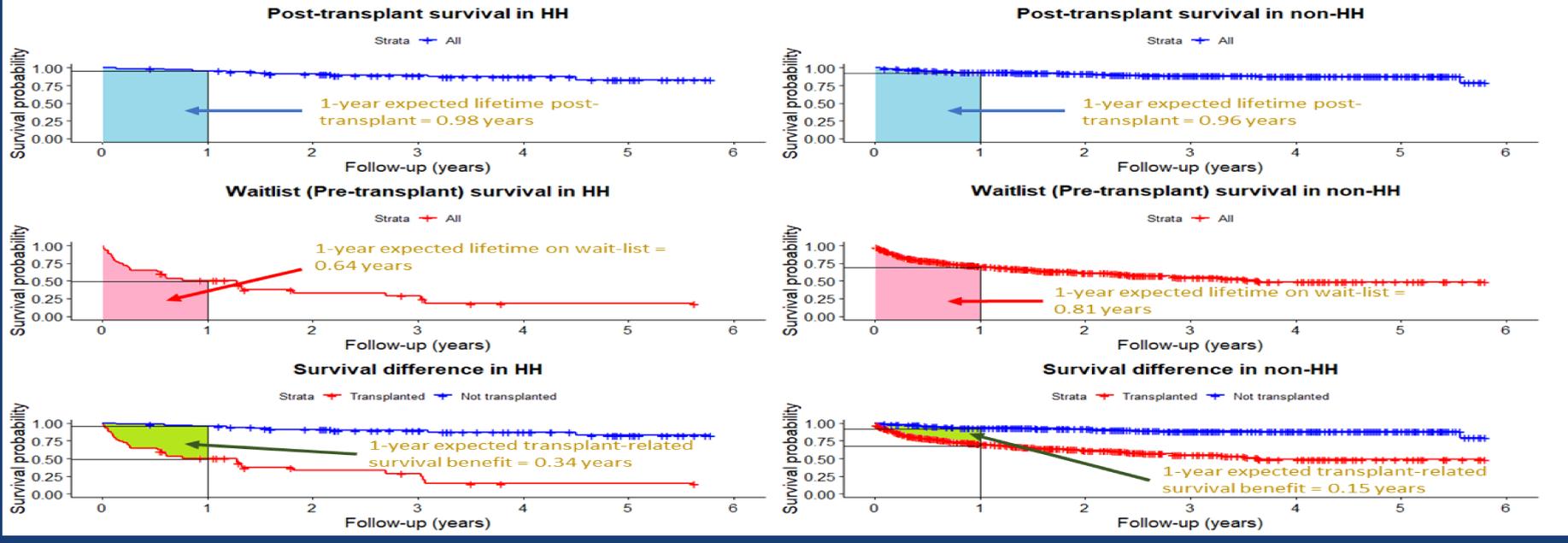
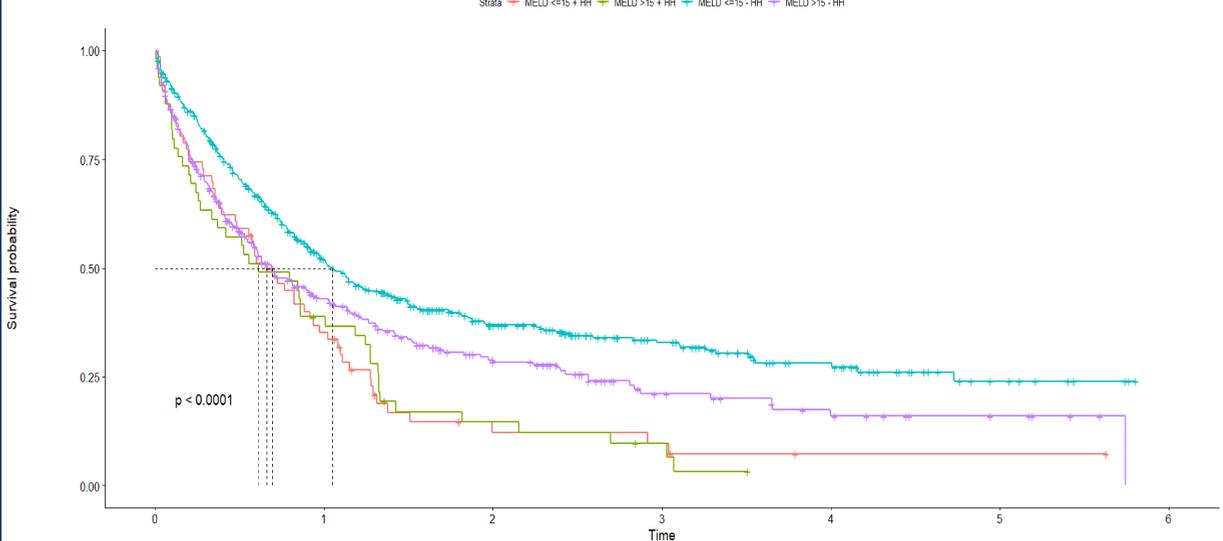


Figure 3. Kaplan Meier curve comparing survival based on MELD score and the presence/absence of hepatic hydrothorax



Limitations and Discussion

- Limitations**
- MELD-Na was not included in the analysis
- Discussion**
- HH is an independent predictor of mortality
 - MELD may be an unreliable predictor of prognosis in the setting of HH
 - The survival benefit of LT for patients with HH is greater than with other complications of cirrhosis.

Questions?
Email karim.t.osman@lahey.org
@Karim_OsmanMD



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