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Impact of hepatopulmonary syndrome in liver transplantation candidates and the role of angiogenesis

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Shareable abstract (@ERSpublications)
The presence of hepatopulmonary syndrome with even mild oxygenation abnormalities was associated with shorter survival in candidates evaluated for liver transplantation and was characterised by higher levels of pro-angiogenic biomarkers https://bit.ly/3EAihft

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Abstract

Background Hepatopulmonary syndrome affects 10–30% of patients with cirrhosis and portal hypertension. We evaluated the serum angiogenic profile of hepatopulmonary syndrome and assessed the clinical impact of hepatopulmonary syndrome in patients evaluated for liver transplantation.

Methods The Pulmonary Vascular Complications of Liver Disease 2 study was a multicentre, prospective cohort study of adults undergoing their first liver transplantation evaluation. Hepatopulmonary syndrome was defined as an alveolar–arterial oxygen gradient ⩾15 mmHg (⩾20 mmHg if age >64 years), positive contrast-enhanced transthoracic echocardiography and absence of lung disease.

Results We included 85 patients with hepatopulmonary syndrome and 146 patients without hepatopulmonary syndrome. Patients with hepatopulmonary syndrome had more complications of portal hypertension and slightly higher Model for End-Stage Liver Disease-Na score compared to those without hepatopulmonary syndrome (median (interquartile range) 15 (12–19) *versus* 14 (10–17), p=0.006). Hepatopulmonary syndrome patients had significantly lower 6-min walk distance and worse functional class. Hepatopulmonary syndrome patients had higher circulating angiopoietin 2, Tie2, tenascin C, tyrosine protein kinase Kit (c-Kit), vascular cell adhesion molecule 1 and von Willebrand factor levels, and lower E-selectin levels. Patients with hepatopulmonary syndrome had an increased risk of death (hazard ratio 1.80, 95% CI 1.03–3.16, p=0.04), which persisted despite adjustment for covariates (hazard ratio 1.79, 95% CI 1.02–3.15, p=0.04). This association did not vary based on levels of oxygenation, reflecting the severity of hepatopulmonary syndrome.

Conclusion Hepatopulmonary syndrome was associated with a profile of abnormal systemic angiogenesis, worse exercise and functional capacity, and an overall increased risk of death.