

Screening of Hepatopulmonary Syndrome (HPS) with CEUS and Pulse-Oximetry in Liver Cirrhosis Patients Eligible for Liver Transplant

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Abstract

Background and aim: The prevalence of hepatopulmonary syndrome (HPS) in the setting of cirrhosis ranges between 4%-47%. We aimed to detect a correlation between heart and lungs findings on contrast-enhanced ultrasound (CEUS) and pulse-oximetry, in order to early detect HPS and thus to improve patients referral to orthotopic liver transplantation (OLT).

Methods: We considered at risk for HPS all patients with delayed left ventricle (LV) enhancement of the contrast agent, at least 3 systolic beats after it appears in the right ventricle (RV). We correlated CEUS results with pulse-oximetry findings, considering to have a positive HPS diagnosis in all patients with both CEUS findings and SaO₂<95%.

Results: From 186 patients diagnosed with liver cirrhosis, 56 patients (30.10%) had delayed LV enhancement of the contrast agent. Pulse-oximetry showed alterations, such as SaO₂<95% and PaO₂<70 mmHg in 62 patients (33.33%). Pearson index showed a good correlation between lung and heart CEUS findings and pulse-oximetry ($r=0.99$) in HPS diagnosis. *Conclusions.* Two non-invasive, simple and rapid methods such as CEUS and pulse-oximetry can easily diagnose HPS, a highly fatal complication of liver cirrhosis, and can also guide the future treatment by speeding up OLT recommendations.

Key words: hepatopulmonary syndrome, CEUS, pulse-oximetry, liver transplant

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