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**ARTICLE OF THE MONTH**

Sonny A, Govindarajan SR, Jaber WA, Cywinski JB. Systolic heart failure after liver transplantation: Incidence, predictors, and outcome. *Clin Transplant*. 2018;32(3). doi:10.1111/ctr.13199

**Abstract:**

“Although most patients presenting for liver transplantation have normal left ventricular function, some develop left ventricular failure after transplantation. The primary objective of our study was to determine the predictors of systolic heart failure (HF) occurring immediately after liver transplantation. Its etiology, prospects of recovery, and factors associated with nonrecovery were also studied. Liver transplantations performed at our institution from January 2006 to February 2015 were evaluated using prospectively collected institutional registries. Patients with echocardiographically documented decline in ejection fraction to <45% within 6 months after liver transplantation were identified. Four controls were chosen per case: matched for age, gender, transplant year, and model for end-stage liver disease score. Conditional multivariable logistic regression was used for primary analysis and nonparametric tests for comparison between groups. In a cohort of 1284 adult patients, 45 cases and 180 controls were identified. Diastolic dysfunction (DD) was an independent predictor (OR 5.26, 95% CI 1.03-28.57, *P* = .04) of systolic HF in multivariable analysis. Stress-induced cardiomyopathy was the most common etiology. Left ventricular function recovered in 21 patients. Pretransplant DD decreased the chances of recovery (*P* = .05). In conclusion, patients with pretransplant DD need close post-transplant follow-up for timely identification of HF.”

COMMENTS MADE BY SCHLICHTING, NICOLETTE MD

**Summary:**

This article, from the January 2018 issue of Clinical Transplantation, was chosen along with several supporting articles to highlight the topic of cardiac disease in the liver transplant patient population. Liver transplantation puts tremendous stress on the cardiovascular system, and cardiovascular disease is a significant cause of post liver transplant morbidity and mortality. Gitman et al (1) wrote a review article summarizing the causes of cardiac disease and methods for diagnosis and management in the perioperative period.

In our main article, Sonny et al performed at retrospective analysis of liver transplant patients to identify predictors of systolic heart failure occurring within six months of transplantation and evaluate the etiology and likelihood of recovery. They found that preoperative diastolic dysfunction significantly increased the likelihood of developing post liver transplant systolic heart failure (OR 5.26, P = 0.04). Patients who developed systolic heart failure within 6 months of liver transplant had an increased risk of graft failure and mortality in the first year post transplant. Approximately half of the patients who developed systolic heart failure demonstrated improvement in their ejection fraction. In the group that did not recover, there was a higher incidence of alcoholic steatohepatitis (P = 0.05), need for pre-liver transplant dialysis (P = 0.02), and diastolic dysfunction (P = 0.05). Of the patients who developed postoperative systolic heart failure, stress-induced cardiomyopathy was the most common cause in the first 6 months (64% of patients). Ischemic cardiomyopathy accounted for 11% of cases in the first 6 months compared to 37% of cases after 6 months.

There is an association between liver and cardiac function, and approximately half of the patients with cirrhosis exhibit cirrhotic cardiomyopathy, a type of cardiac dysfunction comprised of systolic dysfunction, diastolic dysfunction, and electrophysiological abnormalities that is independent of the etiology of liver disease (2, 3). The stress from liver transplantation in patients with cirrhotic cardiomyopathy may lead to overt heart failure. The results from Sonny et al suggest that this underlying cardiac dysfunction from cirrhotic cardiomyopathy may worsen chances of recovery from heart failure.

All of the articles suggest that a thorough cardiovascular workup and continued surveillance of liver transplant candidates is critical. Patients who are found to have cirrhotic cardiomyopathy, specifically with diastolic dysfunction, may benefit from closer follow up in the immediate post liver transplant period to promote earlier recognition of systolic heart failure and institution of therapy.

**References:**

1. Gitman M, Albertz M, Nicolau-Raducu R, Aniskevich S, Pai SL. Cardiac diseases among liver transplant candidates. *Clin Transplant*. 2018;32(7). doi:10.1111/ctr.13296
2. Liu H, Jayakumar S, Traboulsi M, Lee SS. Cirrhotic cardiomyopathy: Implications for liver transplantation. *Liver Transplant*. 2017;23(6):826‐835.
3. Moller S, Lee SS. Hepatology Snapshot: Cirrhotic cardiomyophaty. J Hepatol. 2018;69:958-690.

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