Outcomes of Transcatheter Tricuspid Valve Replacement in Patients With Liver Cirrhosis

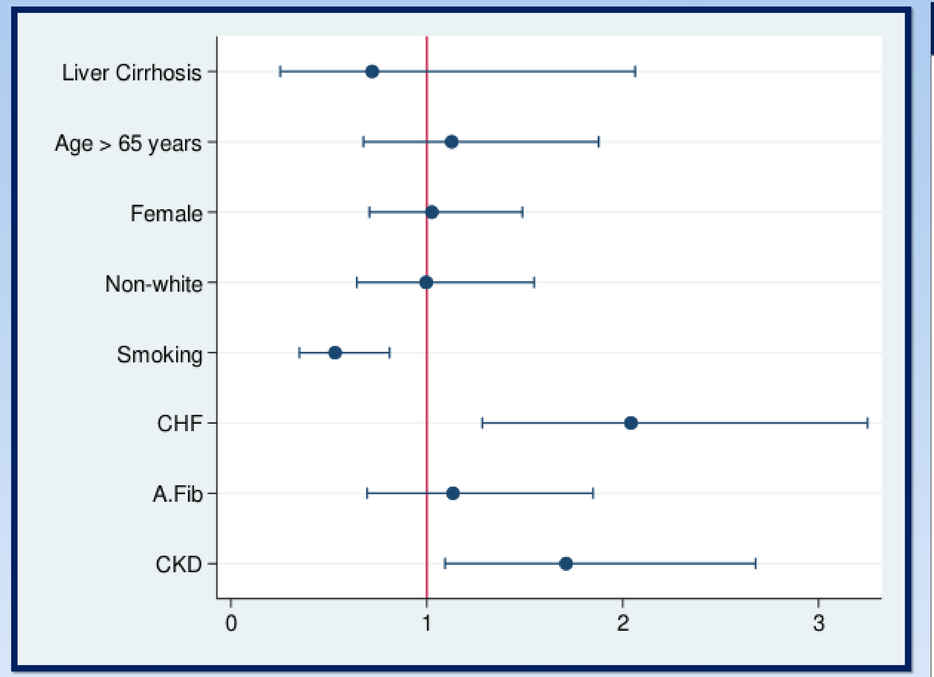
Mahfouz, MD[1]; Parthav Shah, MD[2]; Adham Obeidat, MBBS[2]; Mohammad Darweesh, MD[3]; Mustafa Doughlas, MD[4].
[1]Brown University/Kent Hospital, [2]University of Hawaii, [3]University of Hawaii, [4]Midwestern University Arizona College of Osteopathic Medicine.

INTRODUCTION

Patients with liver cirrhosis who undergo cardiac surgery are at increased risk of postoperative mortality and morbidity. Patients with cirrhosis have pathophysiologic changes that put them at an excessive risk of coagulopathy, hemorrhage, infection, and multiorgan dysfunction. The prevalence of tricuspid valve (TV) disease is rising but it is often undertreated due to increased mortality associated with TV surgery. Liver dysfunction is seen in the majority of patients with TV disease, but there is a lack of data regarding the impact of cirrhosis on prognosis after TV surgery. Our study aimed to look at the clinical outcomes of patients with liver cirrhosis undergoing TV replacement.

Methods

Data were extracted from the National Inpatient Sample (NIS) database from 2016 to 2019. Using the International Classification of Diseases, 10th revision, and Clinical Modification (ICD-10-CM) codes to obtain baseline demographic data, in-hospital mortality, hospital charges, and hospital length of stay (LOS). Statistical analyses were completed using t-test and Chi-squared analysis. Multivariate analysis for the mortality odds ratio (OR) was calculated after adjusting for possible confounders.



	Cirrhosis	Non-Cirrhosis	P-value
Age (years)	48	56	<0.05
Mortality	5.8%	5.6%	0.94
Hospital charge	$444,556	$414,908	0.56
Length of stay (days)	23	20	0.22

Results

A total of 9,360 patients who underwent replacement of TV were identified, and 355 of these patients had liver cirrhosis. The mean age of the cirrhosis vs non-cirrhosis group was 56 years vs. 48 ($P < 0.001$). There was no difference in gender, race, smoking status, and obesity between both groups. However, the cirrhosis group had more prevalence of congestive heart failure (CHF), atrial fibrillation (Afib), hypertension (HTN), chronic obstructive pulmonary disease (COPD), chronic kidney disease (CKD), and alcohol use compared to the non-cirrhotic group. There was no statistically significant difference in mortality between the two groups (OR 0.72; $P = 0.54$). There was no difference in total hospital charge ($414,908 vs. 444,556; $P = 0.56$), or LOS (20 vs. 23 days; $P = 0.22$). CHF and CKD were independently associated with higher odds of mortality.

Conclusion

In our study, we found that cirrhosis did not adversely affect TV replacement outcomes. TV disease is associated with hepatic congestion and TV replacement can potentially improve liver function. So, clinicians should consider TV replacement in cirrhotic patients as it is a safe treatment option. However, further large-scale randomized controlled studies are needed to look at the long-term prognosis of these patients.