Statin Use Is Not Associated with the Incidence of Post-Liver Transplant Adverse Cardiovascular Outcomes

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Background: Cardiovascular disease (CVD) is the leading cause of death after liver transplantation (LT). Statin therapy is effective for primary and secondary prevention of adverse CV events (CVE). Limited data exists on adherence to statin use for primary or secondary prevention of CVE in LT. The primary aim of this study was to determine the rate of statin use for primary or secondary prevention of CVE in LT recipients. A secondary aim was to determine the association between statin use and incidence of CVE after LT.

Methods: A retrospective review of LT recipients at University of Cincinnati from 1/1/2019 to 12/31/2019 with 3-years of follow-up was performed. Hospital-discharge ICD-codes for pre-defined CVE (myocardial infarction, coronary revascularization, heart failure, atrial fibrillation, ventricular tachycardia/fibrillation, cardiac arrest, and stroke) after LT date were used to identify the primary outcome of post-LT CVE. Statin use after LT, and the indication for statin use were recorded. Indication for statin use for primary prevention was based on the 2019 ACC/AHA guideline: LDL-C ≥ 190 mg/dL, history of diabetes and age 40-75, or 10-year atherosclerotic CVD (ASCVD) risk score > 20%. Indication for statin use for secondary prevention: history of ischemic heart disease, peripheral vascular disease (PVD), ischemic stroke, or transient ischemic attack (TIA). Among LT recipients who met criteria for statin initiation, incidence of CVE was compared between those who received statin therapy versus no statin therapy. Between-group comparison was performed using chi-square at significance level $p<0.05$.

Results: Among 129 LT recipients, 65% were male, 90% Caucasian, and mean age 55.9 $\pm$ 10 at LT. Before LT, 42.6% had diabetes, 31.8% hyperlipidemia, 16.3% ischemic heart disease, 0.8% PVD and 0.8% ischemic stroke. After LT, 29 (22.5%) patients had a CVE during follow-up with 75.9% occurring in post-LT year 1. Heart failure accounted for 44.5% of the CVE, atrial fibrillation 36.4%, cardiac arrest 18.2%, myocardial infarction 9.1%, ischemic stroke or TIA 9.1%, and ventricular tachycardia/fibrillation 4.5%. All-cause mortality post-LT was 16.3%. CVE accounted for 23.8% of post-LT deaths. At the time of LT, 116 (89.9%) of recipients met criteria for statin therapy for primary or secondary prevention. Among the 116 patients, 44 (37.9%) received statin therapy in post-LT year 1. The incidence of CVE was 27.3% in the statin group compared to 20.0% in the no statin group ($p=0.35$).

Conclusions: In this retrospective cohort, statin therapy was underutilized post-LT for CVE prevention. Statin therapy initiation in post-LT year 1 was not associated with incidence of post-LT CVE. Larger cohort studies with longer duration of follow-up are needed to confirm or refute these findings.

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