The incidence of coronary artery disease in all Swedish liver transplant patients between 1987 and 2020: A national prospective study

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Background: Liver transplant (LT) is potentially curing end stage liver disease (ESLD). During and afterwards LT surgery, coronary artery disease (CAD) events are among the most frequent and serious complications. Risk factors before and after LT are largely unidentified in large national registers.

Purpose: To identify risk factors of CAD before and after LT in all Swedish patients between 1987 and 2020.

Methods: Data of all Swedish LT patients between 1987 and 2020 were retrieved from the Swedish Patient register. LT patients, aetiologies of ESLD, and comorbidities were identified through ICD-9 and -10 codes. We included a reference group for comparison without LT, having similar age, gender, and municipality. All data were cross-linked to Statistics Sweden and the national Cancer registry to include survival and cancer history. The only exclusion criteria were expatriated LT patients. The primary outcome was the composite of CAD events being acute myocardial infarction, coronary artery revascularisation and angina. Time to CAD event was assessed through cox regressions with competing risks of mortality unrelated to CAD. Cumulative incidence plots were created for comparison between LT and non-LT patients.

Results: A total of 2925 LT patients and 27589 matching cohorts were retrieved (Figure 1). The mean age of the total population was 54.0 years and 62.6% were men. The most predominant aetiology of ESLD was autoimmune disease (28.2%) followed by hepatocellular carcinoma (22.9%). CAD events was diagnosed in 4.5% of the patients before LT. The most prevalent risk factors of CAD at baseline were diabetes (21.8%) and hypertension (21.4%). During a median follow-up of 9.5 years, the incidence of CAD was significantly higher in LT patients as compared with non-LT patients but was not associated to gender (Figure 2).

Conclusion: LT patients have a significant higher risk of CAD events as compared with a reference group not having ESLD. Whether pre- or post LT risk factors of CAD can explain this higher risk needs to be investigated.

Figure 1: Flow chart
**Figure 2:** Cumulative incidence of CAD