

Association Between Non-alcoholic Fatty Liver Disease (NAFLD) and Atherosclerotic Cardiovascular Disease (ASCVD)-Associated Myocardial Infarction and Ischemic Stroke Using Real World Data

Jonathan Rusche¹, Uday Lomada¹, Steven Wu¹, Gattadahalli S. Seetharam^{1,2}

¹Indiana University School of Medicine – Evansville; ²Indiana University School of Medicine
Department of Biochemistry and Molecular Biology

Background/Objectives:

ASCVD-related conditions are the leading cause of death in individuals with NAFLD/non-alcoholic steatohepatitis (NASH). Despite this, the current 10-year ASCVD risk assessment tools do not consider a patient's NAFLD/NASH history. The aim of this study is to examine the association between NAFLD/NASH and ASCVD-associated myocardial infarction and ischemic stroke, and to reinforce existing evidence showing that NAFLD/NASH patients are at greater risk for ASCVD-associated cardiac events.

Methods:

We used de-identified patient data from the IU School of Medicine–Evansville RWEdataLab (CRC/Sidus Insights) National Real-World Cardiology database. Patients with diagnoses of NAFLD or NASH who later developed ischemic stroke (IS) or myocardial infarction (MI) were identified using ICD-9&10 codes. Odds ratios were calculated to estimate the likelihood of MI/IS in patients with NAFLD/NASH.

Results:

Of 3,396,429 patients in the database we identified 674 patients with NAFLD/NASH and MI/IS. In 424 patients, the odds of MI/IS after NAFLD/NASH diagnosis were significantly higher (OR 1.648; 95% CI: 1.489–1.823) compared to patients without NAFLD/NASH, with females at significantly greater odds (OR 1.983; 95% CI: 1.730–2.273) than males (OR 1.366; 95% CI: 1.176–1.587). Patients with type 2 diabetes mellitus (T2DM) and NAFLD/NASH had increased odds of subsequent MI/IS (OR 2.328; 95% CI: 2.015-2.689) compared to those without NAFLD/NASH. Additionally, T2DM females had significantly greater odds of MI/IS (OR 2.861; 95% CI: 2.358-3.470) than T2DM males (OR 1.873; 95% CI: 1.508-2.327) following NAFLD/NASH diagnosis.

Conclusions/Impact:

Our results support an association between NAFLD/NASH and ASCVD-related MI/IS suggesting NAFLD/NASH may be an important early marker of cardiovascular risk. One limitation of this research includes 4-year binning of patient age. Furthermore, NAFLD/NASH is progressive, and diagnosis underrepresents true incidence in the population analyzed. Nonetheless, these results may support revising current ASCVD risk calculators to include NAFLD status, improving risk stratification and encouraging earlier preventive interventions.