OBJECTIVES

The aims of this study were to:
1. Examine changes in triglycerides (TGs), low-density lipoprotein (LDL) cholesterol, and high-density lipoprotein (HDL) cholesterol after a diagnosis of nonalcoholic steatohepatitis (NASH).
2. Measure the incidence of liver cirrhosis (LC) and hepatocellular cancer (HCC) by lipid type.

METHODS

Patients with a laboratory measure for TGs, LDL-, or HDL-cholesterol in the year prior to their first diagnosis of NASH (ICD-10 code K78.81) defined as baseline period were identified through TriNetX, a large electronic medical record network (Figure 1). Mean values for each lipid were assessed in the 1st, 2nd, and 3rd year after the first NASH diagnosis. LC and HCC incidence were measured in patients with consistently abnormal and normal baseline values. Risk ratios (RRs) compared triglyceride (150+ vs <150 mg/dL), HDL (<60 vs 60+ mg/dL), and LDL (130-<130 mg/dL) values, adjusting for confounding using a 1:1 matched greedy propensity score-matched approach as previously shown. ICD-10-25, TriNetx, and LOGIC codes captured all variables.

RESULTS

Patients with and LDL, HDL, and/or TG lab measures at baseline did not differ by age or gender (Table 1). After the incident diagnosis of NASH, the mean TG values increased monotonically, LDL values decreased monotonically, and HDL values remained stable (Table 2). In each lipid category, 20% of patients had a lipid measure after three years. Patients in highest categories decreased most across all three lipids (Figure 3).

Figure 1. Patient flow diagram

Figure 2. Changes in mean (SE) lipid levels from baseline to years 1, 2, and 3 following the incident NASH diagnosis

Figure 3. Changes in mean lipid values between baseline and year 1 after incident NASH diagnosis, by lipid category

Figure 4. The risk of liver cirrhosis and HCC comparing abnormal to normal lipid levels

Table 1. Demographics at time of incident NASH diagnosis, by lipid

Table 2. Baseline patient characteristics before and after matching for each set of normal and abnormal lipids

Note: standardized mean differences <10% after matching for all comparisons except mean ALT.

Note: p<0.01 for all baseline to year 1 comparisons.