Abstract: P1884

Low lipid levels and high variability correlate with the risk of new-onset atrial fibrillation

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Topic(s):
Arrhythmias, General – Epidemiology, Prognosis, Outcome

Citation:
Background: High levels of lipids and lipid variability are established risk factors for atherosclerotic cardiovascular disease. We investigated their roles in the development of atrial fibrillation (AF). This is the largest cohort study yet on the association between lipid levels and AF, and the first study on the association between lipid variability and AF.

Methods: A nationwide population-based cohort of 3,828,652 adults (mean age 43.9 years) from the Korean National Health Insurance Service database without prevalent AF, not on lipid-lowering medication, and with at least 3 measurements of each lipid parameter at 1-2 year intervals over a 4-year period were included. Total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), and triglycerides (TG) were measured, and lipid variability was calculated using variability independent of mean. The cohort was divided into quartiles by baseline lipid levels and lipid variability, and followed up for incident AF.

Results: During median 3.4 years of follow-up, AF was newly diagnosed in 13,240 (0.35%). AF development was inversely associated with TC and LDL-C levels (for top vs. bottom quartile; TC, hazard ratio [HR] 0.76, 95% confidence interval [95% CI] 0.72-0.80; LDL-C, HR 0.78, 95% CI 0.74-0.82) in both sexes, and with TG levels in men (HR 0.85, 95% CI 0.80-0.90). Meanwhile, AF development was associated with higher LDL-C and HDL-C variability (for top vs. bottom quartile; LDL-C, HR 1.16, 95% CI 1.07-1.24; HDL-C, HR 1.08, 95% CI 1.03-1.14) in both sexes, and with TC variability in men (HR 1.16, 95% CI 1.10-1.22).

Conclusions: Lower cholesterol levels (TC, LDL-C) and higher cholesterol variability (LDL-C, HDL-C) were associated with higher risk for AF. Low TG levels and high TC variability were also associated with AF incidence in men. These findings support the ‘cholesterol paradox’ in AF, and suggest that cholesterol variability is also a risk factor for AF development.
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