**BACKGROUND**

- Elevated triglycerides (TGs) have been associated with an increased risk of cardiovascular (CV) events.
- Whether TGs are part of the causal pathway or a marker for TG-rich lipoproteins (i.e. VLDL) remains unclear.
- The majority of TGs are found on VLDL, which also contain 10% of atherogenic apolipoprotein B (apoB).
- When TGs are elevated, the proportion of VLDL-apoB rises.

**METHODS**

- We performed a cohort study in 13,779 pts from the placebo arm of the FOURIER trial.
- All patients had stable atherosclerosis, LDL-C ≥70 mg/dl (or non-HDL-C ≥100 mg/dl), and TG <400 mg/dl.
- Baseline fasting lipid panels and apoB levels were obtained.
- Pts were divided into 5 groups by baseline fasting TG level: <100, 100-149, 150-199, 200-249, ≥250 mg/dL.
- Median follow up was 2.2 years.
- The primary endpoint (PEP) was a composite of CV death, myocardial infarction, stroke, hospitalization for unstable angina, or coronary revascularization.
- Cox proportional hazard regression model was used to assess the trend of the hazard rates across TG groups.
- Models adjusted for traditional clinical risk factors (age, sex, race, region, prior MI, hx of stroke, PAD, HTN, DM, active smoking, high density lipoprotein (HDL)) + apoB.

**RESULTS**

- A total of 1,563 patients met the primary endpoint (11.3%).
- In the adjusted analysis, the risk of CV events significantly increased with higher baseline TGs:

<table>
<thead>
<tr>
<th>KM Rates of Primary Endpoint by Baseline Triglyceride Level</th>
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<tbody>
<tr>
<td>Baseline TG (mg/dL)</td>
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<tr>
<td>---------------------</td>
</tr>
<tr>
<td>&lt;100</td>
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<tr>
<td>100-149</td>
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<tr>
<td>150-199</td>
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<td>200-249</td>
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<td>≥250</td>
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</table>

- However, when adjusted for clinical variables, the trend was no longer present (P=0.21).
- When baseline apoB was added to the model, the pattern reversed, with higher TGs associated with lower CV risk.
- Trend P = 0.021; HR 0.75 for TG ≥250 vs. <100

**HYPOTHESIS**

- When adjusted for clinical variables and apoB, TGs do not independently predict cardiovascular events.

**CONCLUSIONS**

- Although higher TGs were associated with CV events in the unadjusted analysis, no such trend was present when adjusting for clinical risk factors, and a reverse association was found when adding apoB.
- Thus, in patients on statin therapy followed for 2.2 years: (1) the concentration of apoB-containing particles appears to determine CV risk rather than cholesterol or triglyceride content carried by the particles, and (2) for a given apoB concentration, lower CV risk with higher TGs may be due to increased ratio of VLDL to LDL.