As low HDL-C and high non-HDL are associated with increased insulin resistance, hypertension, and obesity.

HDL-C, in turn, has a cardioprotective effect because of its role in reverse cholesterol transport, endothelial cell function, and its antioxidant activity.

Therefore, patients with low HDL-C and high TGs are at higher risk for coronary artery disease (CAD) and adverse cardiac events.

We investigated the relationship between atherosclerotic plaque burden and lipids levels in patients with hypertriglyceridemia and low HDL-C.

70 individuals with hypertriglyceridemia (TGs > 200mg/dl), enrolled in the EVAPORATE (Effect of Vascepa on Improving Coronary Atherosclerosis in people with High Triglycerides Taking Statin Therapy) trial and undergoing Cardiac Computed Tomography Angiography (CCTA) at our center were identified (Table 1).

Using semi-automated plaque analysis software, we measured coronary plaque (total, calcified, non-calcified including fibrous, fibrous-fatty and low attenuation plaque) volume on the CCTA.

Univariate regression analysis was used to measure the linear relationship between log-transformed normalized plaque type and burden and lipid metrics.

As low HDL-C and high non-HDL are associated with non-calcified plaque, screening and optimal medical therapy targeted towards these lipids are important in preventing coronary artery disease.

Further studies to investigate the association of these lipids and lipid lowering therapies on coronary plaque progression are also warranted.

### RESULTS

<table>
<thead>
<tr>
<th>Lipid</th>
<th>Normalized Total Dense Calibrated Volume</th>
<th>Normalized Total Fibrous Fatty Volume</th>
<th>Normalized Total Fibrous Volume</th>
<th>Normalized Total Low Attenuation Volume</th>
<th>Normalized TNCP Volume</th>
<th>Normalized Total Plaque Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDL Cholesterol</td>
<td>0.031</td>
<td>0.016</td>
<td>0.026</td>
<td>0.023</td>
<td>0.023</td>
<td>0.032</td>
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<tr>
<td>LDL Cholesterol</td>
<td>0.001</td>
<td>0.001</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.004</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>0.022</td>
<td>0.020</td>
<td>0.020</td>
<td>0.020</td>
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<td>0.020</td>
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<tr>
<td>Non-HDL Cholesterol</td>
<td>0.001</td>
<td>0.001</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

### DISCUSSION

Coronary artery disease (CAD) is the leading cause of mortality in developed countries, accounting for approximately 43.2% of all deaths in US.

Long-standing risk factors for the development of CAD have typically included age, blood levels of total and high-density lipoprotein (HDL) cholesterol, blood pressure, cigarette use, diabetes mellitus, and left ventricular hypertrophy on electrocardiography.

Recent studies suggest that elevated serum triglyceride levels—especially in patients with additional lipoprotein abnormalities—predict an increased risk of cardiovascular disease.

### REFERENCES


### DISCLOSURES

Matthew J. Budoff, M.D., FACC - Research/Research Grants: General Electric, Bedminster, NJ

- All authors have no conflicts of interest