Abstract: P6152

Incremental prognostic utility of functionally non-significant coronary stenosis in patients undergoing coronary computed tomogram angiography

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Topic(s):
Coronary CT Angiography

Citation:
Background: In patients with suspected coronary artery disease (CAD) who underwent coronary computed tomographic angiography (CCTA), the prognostic value of nonobstructive stenosis is not entirely understood.

Aims: We sought to assess the long-term incremental prognostic utility of functionally non-significant CAD in patients without known prior CAD who underwent CCTA.

Methods: We included 2142 consecutive patients (51±14 years, 53% men) without prior documented CAD who underwent CCTA between 2008-2016 (excluding anomalous coronaries and functionally significant CAD). Traditional risk factors were recorded and pretest likelihood of CAD was calculated. All epicardial coronary arteries were classified as follows: No plaque, minimal luminal irregularities (<25%), mild (25-49%) stenosis and moderate (50-69%) stenosis. All moderate stenoses were confirmed to be not functionally significant by follow-up stress testing/invasive angiography with fractional flow reserve assessment. Plaque was characterized as noncalcified, calcified or mixed. High-risk plaque features (spotty calcification, napkin ring, low attenuation plaque and positive remodeling) were recorded. During follow-up, a composite of death or myocardial infarction was recorded.

Results: 188 (9%) patients had low, 1712 (80%) had intermediate and 242 (11%) patients had high pre-test likelihood of CAD. 45%, 10%, 52% and 22% had hypertension, diabetes, Dyslipidemia and history of smoking respectively. Breakdown of CAD severity was: 1197 (56%) none, 480 (22%) minimal, 267 (13%) mild and 198 (9%) moderate stenoses. 82 (4%) had noncalcified, 245 (11%) had calcified and 618 (29%) had mixed plaque. 465 (22%) had high-risk plaque features. At 6±3 years, 90 (4%) patients had composite events (68 deaths) and 24 (1%) needed coronary revascularization >90 days post-CCTA. 880 (41%) were on statins post-CCTA. Results of multivariable Cox Survival Analysis are shown in Figure 1A. Kaplan-Meier survival curves for a) more severe CAD and b) high-risk plaque features (vs. not) are shown in Figure 1B and C. Longer-term event rates for increasing CAD were 2.8%, 4.6%, 6% and 9.6%, respectively.

Conclusion: In mostly low/intermediate risk patients without documented CAD who underwent CCTA, a higher burden of nonobstructive coronary plaque (or presence of high-risk features) provide incremental prognostic value. Initiating statin therapy following detection of plaque on CCTA was associated with improved longer-term freedom from composite events.
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Conclusion: In mostly low/intermediate risk patients without documented CAD who underwent CCTA, a higher burden of nonobstructive coronary plaque (or presence of high-risk features) provides incremental prognostic value. Initiating statin therapy following detection of plaque on CCTA was associated with improved longer-term freedom from composite events.

Figure 1A: Multivariable Cox Analysis for composite endpoint of death or myocardial infarction

<table>
<thead>
<tr>
<th>Variable</th>
<th>Hazard ratio</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest likelihood of CAD</td>
<td>1.01 [0.99-1.02]</td>
<td>0.82</td>
</tr>
<tr>
<td>CAD</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal plaque</td>
<td>1.49 [0.75-2.96]</td>
<td>0.24</td>
</tr>
<tr>
<td>Mild stenosis</td>
<td>1.78 [1.02-3.11]</td>
<td>0.04</td>
</tr>
<tr>
<td>Moderate stenosis</td>
<td>2.50 [1.31-4.80]</td>
<td>0.005</td>
</tr>
<tr>
<td>Post CCTA statin therapy</td>
<td>0.55 [0.34-0.89]</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Figure 1B

Figure 1C

Log rank statistic 21, p<0.001

Log rank statistic 13, p<0.001