HOTLINE III

CORE320: Diagnostic Performance of Combined Noninvasive Coronary Angiography and Myocardial Perfusion Imaging Using 320-row Detector Computed Tomography

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*No conflict of interest in regard to this presentation
Background and Rationale

• The benefits of revascularization are highest in patients who have coronary stenoses that are hemodynamically significant
  – Evidence for SPECT
  – Evidence for invasively measured FFR (FAME trial)
    – FAME vs. COURAGE trial
  – Limited evidence for CTP, mostly with 64-MDCT systems
### Table 7: Indications of different imaging tests for the diagnosis of obstructive coronary artery disease and for the assessment of prognosis in subjects without known coronary artery disease

<table>
<thead>
<tr>
<th></th>
<th>Asymptomatic (screening)</th>
<th>Symptomatic</th>
<th>Prognostic value of positive result</th>
<th>Prognostic value of negative result</th>
<th>References</th>
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<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Intermediate</td>
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<td><strong>Anatomical test</strong></td>
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<td>Invasive angiography</td>
<td>III A</td>
<td>III A</td>
<td>IIb A</td>
<td>I A</td>
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<tr>
<td>MDCT angiography</td>
<td>III B&lt;sup&gt;c&lt;/sup&gt;</td>
<td>IIIb B</td>
<td>IIa B</td>
<td>III B</td>
<td></td>
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<tr>
<td>MRI angiography</td>
<td>III B</td>
<td>III B</td>
<td>III B</td>
<td>III C</td>
<td>22</td>
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<tr>
<td>Functional test</td>
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<td>Stress echo</td>
<td>III A</td>
<td>III A</td>
<td>I A</td>
<td>III A&lt;sup&gt;d&lt;/sup&gt;</td>
<td>12</td>
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<tr>
<td>Nuclear imaging</td>
<td>III A</td>
<td>III A</td>
<td>I A</td>
<td>III A&lt;sup&gt;d&lt;/sup&gt;</td>
<td>12</td>
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<tr>
<td>Stress MRI</td>
<td>III B</td>
<td>III C</td>
<td>IIa B</td>
<td>III B&lt;sup&gt;d&lt;/sup&gt;</td>
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<tr>
<td>PET perfusion</td>
<td>III B</td>
<td>III C</td>
<td>IIa B</td>
<td>III B&lt;sup&gt;d&lt;/sup&gt;</td>
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</tbody>
</table>

<sup>a</sup> Pretest likelihood of obstructive disease
<sup>b</sup> Prognostic value of positive result
<sup>c</sup> Prognostic value of negative result

References:
12, 17–20, 22, 12, 23–25, 26
CORE320

- Design: Multicenter (16), multinational (8), prospective study with 391 patients
- Noninvasive CT evaluation of CAD lesion severity and hemodynamic significance on a per patient and per vessel basis; comparison to invasive angiography + SPECT
  - Rest CTA and CTP
  - Adenosine Stress CTP
- Combined CTA+CTP found superior to CTA alone, correctly identified flow limiting and functionally relevant obstructive CAD, predicted revascularization with accuracy similar to ICA+SPECT
Patient Based Results

CTA-CTP vs. ICA/SPECT to predict Revascularization
(Reference Standard: Revascularization at 30 days)

Patient Based Combined CTA-CTP
Combined ICA-SPECT vs. Reference Standard
(Revascularization)

P = 0.13

ICA-SPECT ROC Area = 0.76
95% CI [0.71-0.82]

CTA-CTP ROC Area = 0.72
95% CI [0.67-0.78]

Patient Based Combined CTA-CTP
Combined ICA-SPECT vs. Reference Standard
(Revascularization)
Open issues and potential limitations

- Who should have this test?
- Who should go directly to invasive angiography based on clinical information?
- Role of CTP vs. invasive FFR measurement at time of angiography?
- Stress CTP is an additional study after CTA and requires additional radiation and contrast administration.
- 320 row detector CT currently not widely available, data may not apply to 64 row CT
- Concerns and considerations:
  - Exposure to radiation and contrast
  - Cost effectiveness