Abstract: P1436

Diagnostic yield and accuracy of CT coronary angiography compared to invasive coronary angiography: real world data from a district general hospital in the United Kingdom

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Topic(s):
Imaging: Coronary Artery Disease

Citation:
Background: Cost-effectiveness is imperative for a sustainable healthcare service. Non-invasive testing is used to risk stratify patients and reduce the need for invasive investigations in cardiology. The National Institute for Health and Care Excellence (NICE) Clinical Guideline for evaluation of chest pain was updated in 2016 when NICE recommended CT coronary angiography (CTCA) as the first-line investigation for patients with suspected stable coronary artery disease (CAD).

Purpose: To evaluate the accuracy of CTCA in real life daily practice in a district general hospital outside the strict environment of clinical trials.

Methods: A retrospective analysis of all CTCA studies carried out between June and December 2017 was performed. Graft studies were excluded. Potentially obstructive CAD on CTCA was defined as any luminal stenosis =50% of a major epicardial coronary artery. On invasive coronary angiography (ICA), clinically significant CAD was defined as a luminal stenosis of =50% in the left main stem or a stenosis of =70% of any other major epicardial coronary artery.

Results: Out of a total of 528 CTCA studies, 109 patients (mean age 64.2±10.4; 67.9% male) showed potentially significant CAD in at least one major epicardial coronary artery. The median calcium score was 379.7 (IQR=86-929). 61 (56%) patients had ICA, 20 (18.3%) patients had non-invasive functional coronary assessment (19 stress echocardiogram and 1 stress perfusion cardiac magnetic resonance) and 3 (2.8%) patients had both. The remaining patients were managed medically without further investigation.

Correlation between potentially obstructive CAD on CTCA and clinically significant CAD on ICA showed a sensitivity of 95.8% (95% CI: 85.8%-99.5%), specificity of 68.0% (95% CI: 61.0%-74.5%), positive predictive value of 42.2% (95% CI: 37.1%-47.4%), negative predictive value of 98.5% (95% CI: 94.5%-99.6%) and overall accuracy of 73.5% (95% CI: 67.5%-78.9%). Among patients who had ICA, 21 patients (34.4%) required coronary revascularization (16 percutaneous coronary intervention and 5 coronary artery bypass grafting) and 40 (65.6%) patients were treated medically. Only 1 patient (4.3% of 23 patients) showed evidence of inducible ischemia on non-invasive functional testing.

Conclusion: CTCA in a real world practice has high sensitivity and high negative predictive value compared to the gold standard ICA. CTCA improved patient selection for ICA to those most likely to have significant CAD.