



ACC.15

TCT@ACC-12 | innovation in intervention

A1106  
JACC March 17, 2015  
Volume 65, Issue 10S

## Non Invasive Imaging (Echocardiography, Nuclear, PET, MR and CT)

## ADDITIONAL VALUE OF FUNCTIONAL CT FOR THE ASSESSMENT OF HEMODYNAMICALLY SIGNIFICANT CORONARY ARTERY DISEASE: A META-ANALYSIS

Poster Contributions

Poster Hall B1

Saturday, March 14, 2015, 10:00 a.m.-10:45 a.m.

Session Title: Non Invasive Imaging: CT/Multimodality, Angiography, and Non-CT Angiography

Abstract Category: 16. Non Invasive Imaging: CT/Multimodality, Angiography, and Non-CT Angiography

Presentation Number: 1102-021

Authors: *Richard Takx, Tim Leiner, Udo Hoffmann, Massachusetts General Hospital, Boston, MA, USA, University Medical Center Utrecht, Utrecht, The Netherlands*

**Background:** Coronary CT angiography (CCTA) is an excellent reference standard for anatomic coronary artery disease (CAD). However, recently various techniques to provide additional functional assessment of the hemodynamic significance of CAD have been introduced. We performed a meta-analysis to determine the value of adding myocardial perfusion, coronary transluminal attenuation gradient (TAG) and coronary fractional flow reserve CT (FFRCT) to anatomic CAD for the detection of hemodynamically significant CAD.

**Methods:** This meta-analysis was performed in adherence with the PRISMA statement recommendations. We systematically searched PubMed, EMBASE and Web of Science electronic databases for studies using invasive coronary angiography combined with FFR for assessment of intermediate coronary stenoses as the reference standard. Results were pooled to compute summary sensitivity, specificity, likelihood ratios, and the diagnostic odds ratio. Analyses were performed on vessel and patient levels. Since CCTA itself already has an excellent negative likelihood ratio, the positive likelihood ratio (LR+) was chosen as the most important outcome measure.

**Results:** In total, 35 studies (6214 vessels/2482 patients) satisfied the predefined inclusion criteria. 20 studies reported on CCTA, 8 on perfusion, 3 on TAG and 4 on FFR. Across all CCTA studies, at vessel level anatomic assessment of >50% stenosis by CCTA had a LR+ of 2.23 [1.89-2.62]. Adding information on myocardial perfusion (LR+: 6.41 [4.1-10.11]) and TAG to anatomic CAD (LR+: 7.00 [0.51-96.11]) provided a significantly increment in LR+. FFRCT alone also yielded improved results (LR+3.47 [1.92-6.28]). At patient level CCTA had a LR+ of 1.67 [1.41-1.99]. Adding myocardial perfusion provided again a significant increment in LR+ (3.87 [2.13-7.03]) and FFRCT also yielded improved results (LR+: 3.14 [1.96-5.02]).

**Conclusion:** Adding functional to anatomic assessment on CCTA provides significant improvement in LR+ as compared to invasive angiography and FFR.