Diagnostic Performance of 64-Multidetector Row Coronary Computed Tomographic Angiography for Evaluation of Coronary Artery Stenosis in Individuals Without Known Coronary Artery Disease Results From the Prospective Multicenter ACCURACY (Assessment by Coronary Computed Tomographic Angiography of Individuals Undergoing Invasive Coronary Angiography) Trial

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Objectives: The purpose of this study was to evaluate the diagnostic accuracy of electrocardiographically gated 64-multidetector row coronary computed tomographic angiography (CCTA) in individuals without known coronary artery disease (CAD).
Background CCTA is a promising method for detection and exclusion of obstructive coronary artery stenosis. To date, no prospective multicenter trial has evaluated the diagnostic accuracy of 64-multidetector row CCTA in populations with intermediate prevalence of CAD.
Methods: We prospectively evaluated subjects with chest pain at 16 sites who were clinically referred for invasive coronary angiography (ICA). CCTAs were scored by consensus of 3 independent blinded readers. The ICAs were evaluated for coronary stenosis based on quantitative coronary angiography (QCA). No subjects were excluded for baseline coronary artery calcium score or body mass index. Results A total of 230 subjects underwent both CCTA and ICA (59.1% male; mean age: 57 ± 10 years).
On a patient based model, the sensitivity, specificity, and positive and negative predictive values to detect ≥50% or ≥70% stenosis were 95%, 83%, 64%, and 99%, respectively, and 94%, 83%, 48%, 99%, respectively.
No differences in sensitivity and specificity were noted for nonobese compared with obese subjects or for heart rates ± 65 beats/ min compared with >65 beats/min, whereas calcium scores >400 reduced specificity significantly.
Conclusions: In this prospective multicenter trial of chest pain patients without known CAD, 64-multidetector row CCTA possesses high diagnostic accuracy for detection of obstructive coronary stenosis at both thresholds of 50% and 70% stenosis. Importantly, the 99% negative predictive value at the patient and vessel level establishes CCTA as an effective noninvasive alternative to ICA to rule out obstructive coronary artery stenosis.

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The diagnostic accuracy of cardiac CT could be proven by many studies, especially to rule out the presence of significant coronary lesions. One limitation and important issue of criticism was the lack of prospective multi-center trials, since most studies had been performed by single centres.

Budoff et al present the data of the ACCURACY trial, a multi-center study, using 64-slice CT in more than 200 pts. Again, the negative predictive was very high, underlining the value of cardiac CT for ruling out the presence of significant lesions.

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