[3185] A Systematic Review of the Diagnostic Accuracy of CT-Based Detection of Significant Coronary Artery Disease. A Comparison of Segment and Patient-Based Approach

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Objective: Noninvasive computed tomography (CT)-based detection of coronary artery stenosis disease may improve management of patients with suspected coronary artery disease (CAD). We performed a standardized assessment of the diagnostic accuracy of contrast enhanced (CT) comparing segment and patient based approaches. **Methods**: All studies published in peer-reviewed literature between January 1990 and March 2005 testing the diagnostic accuracy of contrast enhanced cardiac CT for the detection of significant stenosis compared to catheter-based coronary angiography. Two observers abstracted the number of true/ false positive and negative findings by CT. New original data were generated to perform a standardized calculation of the mean pooled summary estimates of sensitivity and specificity with 95% confidence intervals (CI). We compared the pooled summary estimates of diagnostic accuracy between a segment- based and a per-patient based approach. **Results**: We analyzed 30 studies (13 EBCT, ten 4/8-slice MDCT, and seven 16-slice MDCT) comprising 1849 patients (78.3% males; mean age: 58.8 years, prevalence of CAD: 61 ± 18%). On a per segment basis, CT correctly detected 1,094 of 1,318 stenotic lesions (83% sensitivity; CI: 81-85%) and correctly ruled out stenosis in 6,119 of 6,517 segments (94% specificity; CI: 93-95%). CT missed the detection of 225 stenoses and incorrectly detected 398 stenoses. On a per patient basis, CT correctly detected 399 of 460 patients with significant CAD (87% sensitivity; CI: 83-90%) and correctly ruled out CAD in 251 of 366 patients (69% specificity; CI: 63-72%). CT missed the detection of 61 patients with significant CAD and incorrectly identified 115 patients as having significant CAD in whom invasive angiography showed no significant stenosis. In stratified analysis, sensitivity and specificity of both approached were independent of CT scanner type . **Conclusion**: The sensitivity and specificity of cardiac CT for the detection of coronary artery stenosis is different between segment and patient based approaches. Recognition of these differences may play a key role to determine the appropriate use of coronary CT in the management of patients with suspected CAD.

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