Diagnostic Accuracy of 256-row CT Angiography for Detecting Obstructive Coronary Artery Disease

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Background: Coronary CT angiography (CCTA) can assess coronary artery disease (CAD). New generation scanners may offer improved diagnostic quality. We assessed the performance characteristics of 256-row CCTA for detection of obstructive CAD compared to invasive quantitative coronary angiography (QCA).

Methods: 74 consecutive symptomatic pts (age 60±12 years, 30% female) without known CAD underwent 256-row CCTA prior to invasive coronary angiography. Obstructive CAD on CCTA was assessed by two blinded observers using the 18-segment SCCT model. Invasive angiograms were analyzed for obstructive CAD (>50% stenosis) using QCA. Diagnostic accuracy of CCTA for detection of obstructive CAD was determined using QCA as the reference standard. Non-assessable CCTA segments were considered obstructive for purpose of analysis.

Results: QCA demonstrated obstructive CAD in 79 segments in 47/74 (63%) pts. Overall, 1061 coronary segments were available for comparative analysis, of which 22 (2%) were non-assessable by CCTA, mostly due to heavy calcification. Both segment-based and patient-based analysis revealed high diagnostic accuracy of 256-row CCTA (table). Three segments with obstructive CAD in 3 pts were not detected by CCTA. All 3 pts had additional coronary obstructions identified by CCTA and QCA.

Conclusions:
1. 256-row CCTA showed high sensitivity and high predictive accuracy for detection of obstructive CAD in pts without previously known disease.
2. The rate of non-assessable segments was low.

Parameter	segment based analysis (%, 95% CI)	patient based analysis (%, 95% CI)
Sensitivity	96 (92-100)	100
Specificity	97 (96-98)	70 (53-88)
Positive predictive value	72 (63-80)	86 (76-95)
Negative predictive value	99.7 (99.3-100)	100
Predictive accuracy	97 (96-98)	89 (82-96)