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IDENTIFYING PATIENTS BY CT ANGIOGRAPHY WHO WOULD OR WOULD NOT BENEFIT FROM CORONARY ARTERIAL REVASCULARIZATION - INSIGHTS FROM THE CORE-64 INTERNATIONAL, MULTICENTER STUDY

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Background: Coronary artery stenoses in proximal segments are commonly revascularized while those in distal segments are often managed medically. Noninvasive identification of patients who are unlikely to benefit from revascularization may avoid cardiac catheterization in many patients.

Methods: CORE-64 compares 64-slice CT angiography (CTA) with conventional coronary angiography (CCA) for detecting coronary artery disease (CAD) in 371 patients who were referred for cardiac catheterization with clinical suspicion of CAD. Continuous quantitative assessments of diameter stenoses were performed in coronary segments of at least 1.5 mm diameter using a 19-coronary segment model. Stenoses 35% for the left main coronary artery and 40% for the proximal and mid LAD and RCA, as well as for the proximal LCx, termed “critical coronary segments”, were considered significant by quantitative CTA. Results were compared to CCA using a 70% diameter stenosis threshold by visual inspection as reference for disease.

Results: Complete matching data for both imaging modalities were available in 364 of 371 patients. Of 364 patients 240 had disease in critical coronary artery segments (65%). Sensitivity, specificity, positive and negative predictive value for CTA to identify patients with disease in critical coronary artery segments were 97% (95% confidence interval [CI] 93-99), 62% (55-69), 70% (63-75), and 96% (91-99). Using the same criteria, sensitivity, specificity, positive and negative predictive value for CTA to identify the 268 patients who underwent clinically driven revascularization within 30 days were 98% [CI] 94-100), 43% (36-49), 52% (45-58), and 97% (91-99).

Conclusions: In a selective, high risk patient population, CT angiography identifies patients who are likely to benefit from coronary artery revascularization with high diagnostic accuracy. Conversely, a negative CT test result is associated with exceedingly low likelihood of disease that warrants revascularization. These results suggest a potential role of CTA as a gatekeeper for cardiac catheterization that should be explored in prospective studies.