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Coronary calcium score as gatekeeper for 64-slice computed tomography coronary angiography in patients with chest pain: per-segment and per-patient analysis

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We sought to investigate the performance of 64-slice CT in symptomatic patients with different coronary calcium scores. Two hundred patients undergoing 64-slice CT coronary angiography for suspected coronary artery disease were enrolled into five groups based on Agatston calcium score using the Mayo Clinic risk stratification: group 1: score 0, group 2: score 1-10, group 3: score 11-100, group 4: score 101-400, and group 5: score > 401. Diagnostic accuracy for the detection of significant (>/=50% lumen reduction) coronary artery stenosis was assessed on a per-segment and per-patient base using quantitative coronary angiography as the gold standard. For groups 1 through 5, sensitivity was 97, 96, 91, 90, 92%, and specificity was 99, 98, 96, 88, 90%, respectively, on a per-segment basis. On a per-patient basis, the best diagnostic performance was obtained in group 1 (sensitivity 100% and specificity 100%) and group 5 (sensitivity 95% and specificity 100%). Progressively higher coronary calcium levels affect diagnostic accuracy of CT coronary angiography, decreasing sensitivity and specificity on a per-segment base. On a per-patient base, the best results in terms of diagnostic accuracy were obtained in the populations with very low and very high cardiovascular risk.