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Titel des Beitrags:
Incremental prognostic value of coronary computed tomographic angiography over coronary artery calcium score for risk prediction of major adverse cardiac events in asymptomatic diabetic individuals.

Abstract:
Coronary artery disease (CAD) diagnosis by coronary computed tomographic angiography (CCTA) is useful for identification of symptomatic diabetic individuals at heightened risk for death. Whether CCTA-detected CAD enables improved risk assessment of asymptomatic diabetic individuals beyond clinical risk factors and coronary artery calcium scoring (CACS) remains unexplored. From a prospective 12-center international registry of 27,125 individuals undergoing CCTA, we identified 400 asymptomatic diabetic individuals without known CAD. Coronary stenosis by CCTA was graded as 0%, 1-49%, 50-69%, and >=70%. CAD was judged on a per-patient, per-vessel and per-segment basis as maximal stenosis severity, number of vessels with >=50% stenosis, and coronary segments weighted for stenosis severity (segment stenosis score), respectively. We assessed major adverse cardiovascular events.
MACE - inclusive of mortality, nonfatal myocardial infarction (MI), and late target vessel revascularization>=90 days (REV) - and evaluated the incremental utility of CCTA for risk prediction, discrimination and reclassification. Mean age was 60.4 ± 9.9 years; 65.0% were male. At a mean follow-up 2.4 ± 1.1 years, 33 MACE occurred (13 deaths, 8 MI, 12 REV) [8.25%; annualized rate 3.4%]. By univariate analysis, per-patient maximal stenosis [hazards ratio (HR) 2.24 per stenosis grade, 95% confidence interval (CI) 1.61-3.10, p< 0.001], increasing numbers of obstructive vessels (HR 2.30 per vessel, 95% CI 1.75-3.03, p< 0.001) and segment stenosis score (HR 1.14 per segment, 95% CI 1.09-1.19, p< 0.001) were associated with increased MACE. After adjustment for CAD risk factors and CACS, maximal stenosis (HR 1.80 per grade, 95% CI 1.18-2.75, p = 0.006), number of obstructive vessels (HR 1.85 per vessel, 95% CI 1.29-2.65, p< 0.001) and segment stenosis score (HR 1.11 per segment, 95% CI 1.05-1.18, p< 0.001) were associated with increased risk of MACE. Beyond age, gender and CACS (C-index 0.64), CCTA improved discrimination by maximal stenosis, number of obstructive vessels and segment stenosis score (C-index 0.77, 0.77 and 0.78, respectively). Similarly, CCTA findings improved risk reclassification by per-patient maximal stenosis [integrated discrimination improvement (IDI) index 0.03, p = 0.03] and number of obstructive vessels (IDI index 0.06, p = 0.002), and by trend for segment stenosis score (IDI 0.03, p = 0.06). For asymptomatic diabetic individuals, CCTA measures of CAD severity confer incremental risk prediction, discrimination and reclassification on a per-patient, per-vessel and per-segment basis.