Prognostic implications of coronary artery calcium in the absence of coronary artery luminal narrowing.

Coronary artery calcium (CAC) scoring is a predictor of future adverse clinical events, and a surrogate measure of overall coronary artery plaque burden. Coronary computed tomographic angiography (CCTA) is a contrast-enhanced method that allows for visualization of plaque as well as whether that plaque causes luminal narrowing. To date, the prognosis of individuals with CAC but without stenosis has not been reported. We explored the prevalence of CAC>0 and its prognostic utility for future mortality for patients without luminal narrowing by CCTA. From 17 sites in 9 countries, we identified patients without known coronary artery disease, who underwent CAC scoring and CCTA, and were followed for >3 years. CCTA was graded for % stenosis according to a modified American Heart Association 16-segment model. We calculated hazard ratios (HR) with 95% confidence intervals (95% CI) for incident mortality and compared risk of...
death for patients as a function of presence or absence of CAC and presence or absence of luminal narrowing by CCTA. Among 6656 patients who underwent CCTA and CAC scoring, 399 patients (6.0%) had no coronary luminal narrowing but CAC>0. During a median follow-up of 5.1 years (IQR: 3.9-5.9 years), 456 deaths occurred. Compared to individuals without luminal narrowing or CAC, individuals without luminal narrowing but CAC>0 were older, more likely to be male and had higher rates of diabetes, hypertension, and dyslipidemia. Individuals without luminal narrowing but CAC experienced a 2-fold increased risk of mortality, with increasing risk of mortality with higher CAC score. Following adjustment, incident death persisted (HR, 1.8; 95% CI, 1.1-2.9, p = 0.02) among patients without luminal narrowing but with CAC>0 compared with patients whose CACS = 0. Individuals without luminal narrowing but CAC>=100 had mortality risks similar to individuals with non-obstructive CAD (0=100 and no coronary luminal narrowing experience death rates similar to those with non-obstructive CAD.)