Clinical outcomes of fractional flow reserve by computed tomographic angiography-guided diagnostic strategies vs. usual care in patients with suspected coronary artery disease: the prospective longitudinal trial of FFR(CT): outcome and resource impacts

Title: Clinical outcomes of fractional flow reserve by computed tomographic angiography-guided diagnostic strategies vs. usual care in patients with suspected coronary artery disease: the prospective longitudinal trial of FFR(CT): outcome and resource impacts

Abstract: In symptomatic patients with suspected coronary artery disease (CAD), computed tomographic angiography (CTA) improves patient selection for invasive coronary angiography (ICA) compared with functional testing. The impact of measuring fractional flow reserve by CTA (FFRCT) is unknown. At 11 sites, 584 patients with new onset chest pain were prospectively assigned to receive either usual testing (n = 287) or CTA/FFR(CT) (n = 297). Test interpretation and care decisions were made by the clinical care team. The primary endpoint was the percentage of those with planned ICA in whom no significant obstructive CAD (no stenosis >=50% by core laboratory quantitative analysis or invasive FFR<0.80) was found at ICA within 90 days. Secondary endpoints including death, myocardial infarction, and unplanned revascularization were independently and blindly adjudicated. Subjects averaged 61 ± 11 years of age, 40% were female, and the mean pre-test probability of obstructive CAD was 49 ± 17%. Among those with intended ICA (FFR(CT)-guided = 193; usual care = 187), no obstructive CAD was found at ICA in 24 (12%) in the CTA/FFR(CT) arm and 137 (73%) in the usual care arm (risk difference 61%, 95% confidence interval 53-69, P < 0.0001), with similar mean cumulative radiation exposure (9.9 vs. 9.4 mSv, P = 0.20). Invasive coronary angiography was cancelled in 61% after receiving CTA/FFR(CT) results. Among those with intended non-invasive testing, the rates of finding no obstructive CAD at ICA were 13% (CTA/FFR(CT)) and 6% (usual care; P = 0.95). Clinical event rates within 90 days were low in usual care and CTA/FFR(CT) arms. Computed tomographic angiography/fractional flow reserve by CTA was a feasible and safe alternative to ICA and was associated with a significantly lower rate of invasive angiography showing no obstructive CAD.
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