

“Seeing is Believing”: Reduction of Coronary Events by CT Angiography Compared to Conventional Risk Stratification

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Abstract

The PROMISE study of symptomatic patient with suspected coronary artery disease (CAD) did not demonstrate superiority of CT angiography (CTA) in 2-year clinical outcomes compared to stress testing, despite the overall increase in radiation exposure, casting doubt on the utility of this modality in the diagnosis of coronary artery disease (1). In a recent issue of the New England Journal of Medicine, Newby et al (2) published the findings of the SCOT-HEART (Scottish COmputed Tomography of the HEART) trial. This was an open-label, multicenter, parallel-group trial, which randomly assigned 4146 patients referred for evaluation of stable chest pain to standard care plus CTA (2073 patients) or standard care alone (2073 patients). The primary end point, death from coronary disease or nonfatal myocardial infarction (MI) at 5 years, was assessed over 3 to 7 years of follow-up.

The inclusion criteria were:

- Patients 18 to 75 years of age
- Stable chest pain
- Referral by a primary care physician to a cardiology clinic

Patients underwent clinical evaluation, including, if indicated, symptom-limited exercise stress test. Patients were randomly assigned in a 1:1 ratio to standard care plus CTA or standard care alone. Patient management according to available data was at the discretion of the treating provider. Providers caring for patients in the CTA group were urged to incorporate the results of the CTA in their management decisions. Providers caring for patients in the standard-care group were prompted to consider a prespecified cardiovascular risk score in their management decisions. When there was evidence of nonobstructive or obstructive coronary artery disease on the CTA, or when a patient had a high risk on a prespecified cardiovascular risk score, the providers were encouraged by the trial coordinating center to prescribe preventative therapies such as aspirin and statin medications.

Results:

The primary end point (death from coronary artery disease or nonfatal myocardial infarction) was 2.3% (48 patients) in the CTA group compared to 3.9% (81 patients) in the standard-care group ($P = 0.004$). The difference was driven mostly by a lower rate of nonfatal MI in the CTA group compared with the standard-care group. At 5 years, there was no difference in the frequency of coronary angiography (23.6% versus 24.2%) or revascularization (13.5% versus 12.9%) between the groups.

The 5-year event rates were higher in patients with possible angina (3.1%) compared with those with nonanginal chest pain (1.8%). However, the absolute difference in the primary end point at 5 years between the CTA group and the standard-care group was similar in these two patient subsets (1.5 percentage points in patients with possible angina and 1.3

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percentage points in patients with nonanginal chest pain).

Discussion:

SCOT-HEART trial demonstrated that CT angiography, with resultant changes in treatment, caused a significantly lower rate of death from coronary disease or nonfatal MI than standard care alone. Although invasive angiography and coronary revascularization use were higher in the CTA group in the first few months of follow-up, there were no differences in the overall use of invasive angiography and coronary revascularization at 5 years. These findings suggest that the CTA resulted in more correct diagnoses of coronary artery disease than standard care alone, which, in turn, resulted in the increased use of preventative therapies, causing fewer clinical events in the CTA group than in the standard-care group.

Clinical Perspective:

The findings of SCOT-HEART clinic trial are intriguing. The anatomic delineation of coronary disease using CT angiography in patients suspected of having coronary disease had a greater impact on implementation of preventative therapies, resulting in better cardiovascular outcomes, compared to incorporating a prespecified cardiovascular risk

score. It leaves one to ponder whether providers would rather "see" the coronary disease using CT angiography before they "believe" in applying life-saving preventative therapies, rather than use the more abstract risk scoring, or whether the particular risk scoring system employed in this study (The ASSIGN risk score) fell short of protecting at risk patients. Further studies, possibly with comparison of other risk scoring schemes to CT angiography, may help shed some light on this point. Meanwhile, the significant findings of this study seem to have added a prognostic qualification to the use of CT angiography which may help offset some of the negative publicity surrounding its implementation.

References:

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