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IMAGING

Effect of CT coronary angiography on the diagnosis and outcomes of patients with CAD

The benefit of using CT coronary angiography (CTCA) to diagnose patients with new-onset stable angina due to coronary artery disease (CAD), and the effects of this use on the patients' subsequent management and clinical outcomes, are not known. The SCOT-HEART and PROMISE trials presented at the 2015 ACC Scientific Sessions aimed to validate the benefits of CTCA use in these patients.

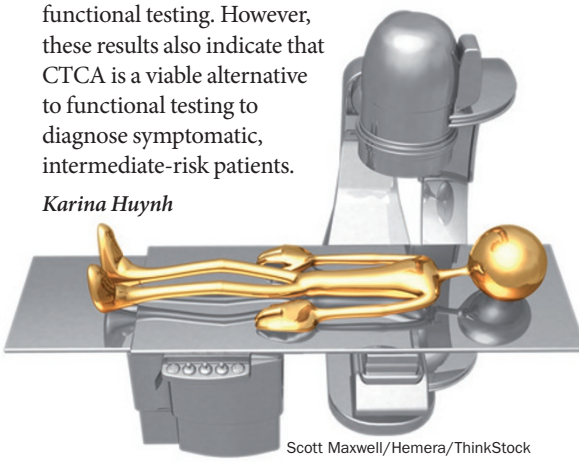
Investigators of the prospective, open-label SCOT-HEART trial randomly assigned patients presenting with stable angina to either standard care plus CTCA, or standard care alone. The primary end point was the proportion of patients with a diagnosis of angina pectoris due to CAD at 6 weeks. Long-term outcomes, such as death and myocardial infarction (MI), were also recorded.

Compared with standard care, CTCA was found to increase the certainty (RR 1.79, 95% CI 1.62–1.96, $P<0.0001$), but not the frequency (RR 0.93, 95% CI 0.85–1.02, $P=0.1289$), of the diagnosis of angina due to CAD. Overall, the diagnosis of angina due to CAD at 6 weeks was reclassified in 23% of patients in the CTCA group, and only in 1% of patients in the standard care group ($P<0.001$). These findings indicate that CTCA is useful in clarifying the diagnosis of patients with suspected angina secondary to CAD. After a follow-up period of 1.7 years, initial CTCA evaluation was associated with an apparent, but not statistically significant, 38% reduction in CAD death and nonfatal MI (adjusted HR 0.62, 95% CI 0.38–1.01, $P=0.0527$). The SCOT-HEART investigators note that the apparent improvements in fatal and nonfatal coronary events need to be confirmed by further long-term follow-up.

Similarly, the PROMISE trial aimed to assess and compare the outcomes of patients with new-onset symptoms suggestive of CAD undergoing noninvasive diagnostic testing with either CTCA or functional testing. Patients were randomly assigned to initial anatomical testing with CTCA, or functional testing (exercise electrocardiography, nuclear stress testing, or stress echocardiography). The primary end point was a composite of death, MI, hospitalization for unstable angina, or major procedural complication. During the 25-month follow-up period, a primary end point event occurred in 3.3% of the CTCA group and in 3.0% of the functional-testing group (adjusted HR 1.04, 95% CI 0.83–1.29, $P=0.75$). Overall radiation exposure was higher in the CTCA group compared with the functional-testing group (12.0 mSv vs 10.1 mSv, $P<0.001$).

Interestingly, while the SCOT-HEART trial demonstrated that CTCA was effective in verifying the diagnosis of angina due to CAD, and might potentially improve long-term outcomes, findings from the PROMISE trial indicate that symptomatic patients with CAD who received initial assessment with CTCA do not benefit from improved outcomes after 2 years compared with those who underwent initial functional testing. However, these results also indicate that CTCA is a viable alternative to functional testing to diagnose symptomatic, intermediate-risk patients.

Karina Huynh



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Original articles The SCOT-HEART Investigators. CT coronary angiography in patients with suspected angina due to coronary heart disease (SCOT-HEART): an open-label, parallel-group, multicentre trial. *Lancet* doi:10.1016/S0140-6736(15)60291-4 | Douglas, P. S. *et al.* Outcomes of anatomical versus functional testing for coronary artery disease. *N. Engl. J. Med.* doi:10.1056/NEJMoa1415516