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CT Coronary Angiography in Patients with Suspected CAD: No Short-Term Benefit, Increased Rate of Invasive Angiography

Clinical Question

What value does computed tomographic (CT) coronary angiography have for patients with suspected coronary artery disease (CAD)?

Bottom Line

For patients with suspected stable CAD, adding CT coronary angiography had no short-term effect on patient symptoms or hospitalizations but increased the number of coronary angiograms. Additionally, more patients who had CT coronary angiography underwent preventive treatment and anti-anginal treatment. (Level of Evidence = 2b)

Synopsis

These investigators recruited 4,100 patients with suspected stable angina who were referred by their primary care physicians to 12 Scottish cardiology chest pain clinics. Each of the patients underwent a standardized assessment and were randomized to receive standard care or standard care plus CT coronary angiography. The electrocardiogram result was normal in more than 80% of the patients in each group. The cardiologist performed a stress test in 85% of the patients, and nearly two-thirds in each group were normal. Among the patients undergoing CT coronary angiography, 2% had mild and self-limited adverse events (contrast reactions, extravasation of contrast material, vasovagal reactions, headaches). Nearly two-thirds had signs of CAD on the

CT coronary angiography, one-fourth of whom had obstructing lesions. At the end of six weeks, the diagnosis of CAD changed in approximately 25% of the patients undergoing CT coronary angiography, but only 1% of those undergoing standard care. The subsequent actions of cardiologists changed in the CT coronary angiography group. Specifically, they cancelled 121 stress tests and 29 invasive angiograms but added 94 more invasive angiograms. At the end of six weeks, the patients experienced no differences in symptom severity or hospitalizations for chest pain. Additionally, at the end of nearly 1.5 years, there was no statistical difference in the rate of all myocardial infarctions, although this study was not designed to specifically evaluate this.

The CT coronary angiography patients were more likely to have preventive and anti-anginal treatments canceled and more likely to have these treatments added to their therapy. Although this seems odd at first, it does follow a certain logic. We have patients with suspected stable CAD—a group for whom medical treatment, percutaneous interventions, and bypass surgery are equally effective in symptom relief, prevention of subsequent myocardial infarction, and death—who undergo a novel diagnostic test. The results of the test underscore two points: the lack of blinding, with standardized decisions based on the results, and the technological imperative. The cardiologists know the results of the CT coronary angiography and feel compelled to act, for good reasons or for bad. In a better design, the treating cardiologists would have prespecified next steps. These latter points may explain the variability in treatment decisions. Of course, it is also possible that the cardiologists were in fact individualizing treatment in an appropriate manner, and when we pool everything together, it all becomes a jumble.

Study design: Randomized controlled trial (nonblinded)

Funding source: Government

Allocation: Concealed

Setting: Outpatient (specialty)

Reference: *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 [published correction appears in Lancet. 2015;385(9985):2354]. Lancet. 2015;385(9985):2383-2391.*

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