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Identifying CAD in Stable Patients: CT Imaging or Start With Functional Testing?

When it comes to choosing CT or functional testing as a first-line approach in patients with suspected angina, not everyone agrees.

By Yael L. Maxwell July 12, 2017

WASHINGTON, DC—When a patient presents with suspected angina due to coronary heart disease, should clinicians go all in with coronary CT to confirm the diagnosis, or should they start with functional testing and move forward from there? That was the issue deliberated during a debate session last weekend here at the Society of Cardiovascular Computed Tomography (SCCT) 2017 Annual Scientific Meeting.

Recent data from both the SCOT-HEART and PROMISE trials showed an increased capacity to diagnose coronary heart disease in patients with stable chest pain when coronary CT is added to standard functional testing. While neither trial showed an improvement in hard outcomes, both a post-hoc analysis of SCOT-HEART and a recent observational study demonstrated a lower MI risk with the addition of coronary CT and suggested the test's value despite its added cost.

> **When you do ischemia testing, it's like you're flying blind. You don't know what the patient's burden of disease is.**
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Out of all of the topics debated during this special SCCT session, co-chair Leslee Shaw, PhD (Emory University, Atlanta, GA), told TCTMD believed this one speaks to one of the most glaring gaps between clinical practice and the evidence base. There are "a lot of compelling data [that] folks can really benefit from an initial CT strategy," she said. "The most important issue is that when you do ischemia testing, it's like you're flying blind. You don't know what the patient's burden of disease is. And so what we really want to talk about is doing an initial CT strategy and then selectively looking for ischemia in those folks with an intermediate stenosis or significant stenosis so then we can get into our ischemia-guided management strategies."

CT for the Win

Making the case for an initial CT approach, SCOT-HEART principal investigator David Newby, MD (University of Edinburgh, Scotland), said that it is "the test of choice" with regard to diagnosis, investigation, treatment, and outcomes.

"We've got a whole host of different tests that we can do, and depending on who's your local imager, you get various different attitudes as to which is the best test," he said. The guidelines reflect the fact that as a cardiologist, "you're like a spoiled child in a sweet shop. You can choose whatever you like."

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The European guidelines are “a bit of a mess” in that “you can run any test that you like, really, as long as you're used to doing it,” he commented. And he was “shocked to see” that treadmill testing is the primary recommendation of the 2012 American College of Cardiology/American Heart Association guidelines.

Despite the US recommendations, however, Newby joked that “we know that you all read the guidelines” given that only 10% of patients were treated with a first-line treadmill test in PROMISE.

“So there's something not quite right in terms of testing. But of course what you want is a nice fancy CT,” he said. “As you know, not only can you see whether you've got disease, you can also bang your head on it as you go down the coronary artery.”

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>
> **DAVID NEWBY**

Although CT might be more expensive initially, he cited data from the CAPP trial showing a cost savings associated with fewer repeat clinic and hospital

visits in patients imaged initially with CT versus stress electrocardiography testing. “It’s a cheaper option,” Newby said.

As for CT’s effect on treatment, “preventative therapies go up in patients with nonobstructive disease. Antianginal therapies are changed. Also, there's a slight increase in surgery,” he said. “But there was a reason for it. They needed treatment.”

Despite its final numbers, SCOT-HEART also showed an outcomes difference between CT and functional testing, he argued. “We can argue long and hard about that lovely P value, but if you take out that treatment delay, you'll see that once you act upon that result, you do get a halving of event rates.”

Last year, the NICE guidelines were published prioritizing the use of CT angiography in patients with suspected stable angina. “For all of these reasons, we should do CT first,” Newby concluded. “Obviously the European and American guidelines need to be updated. . . . Ultimately, if you want to know if a person’s got coronary heart disease, you've got to look to see if they've got it. And the only way to do that noninvasively is to use CT.”

Not So Fast

Marcelo Di Carli, MD (Brigham and Women’s Hospital, Boston, MA), took the opposite stance. While “CT has

value, . . . I don't believe that it is the test of choice in every patient with stable syndromes," he said. "As I'm reading the literature, there is no measurable outcome advantage the way these trials were designed to prove that it was superior to a strategy using stress testing."

> **"I don't believe that it is the test of choice in every patient with stable syndromes."**
>
> MARCELO DI CARLI

The biggest open question is in low-to-intermediate risk patients, he argued, since "the patients were actually quite low risk" in SCOT-HEART.

Comparing stress testing against CT, there is "no argument" that the latter better identifies CAD, Di Carli said. "You will have the certainty that you're dealing with atherosclerosis."

But despite the more aggressive medical therapy seen in the CT arm of SCOT-HEART, "there was really no measurable difference between the outcomes between the two strategies. Importantly, there was no difference in symptom control," he commented, adding that CT was also associated with higher cost.

Also, "CT leads to more downstream invasive angiographies and more revascularization, again, without a

measurable change in the outcome," Di Carli continued. "This is relevant because many of the patients that come for testing are older patients" on Medicare who are being subjected to more revascularization procedures without an improvement in outcomes, he argued.

Thirdly, "the widespread use of statins that is advocated by guidelines and education would reduce the advantage of coronary CT for atherosclerosis imaging," Di Carli stated.

"Why do we really need advanced imaging for atherosclerosis to initiate preventive measures in patients with chest pain and risk factors?" he asked, echoing an argument made in a separate SCCT debate. Also, "if athero imaging becomes a clinical necessity [coronary calcium scoring] may be all we need. This approach is becoming a common addition to nuclear perfusion imaging."

As for the guidelines, Di Carli said he was "sure" they will be updated soon to reflect a class I indication for CT in "selected symptomatic low-risk patients." For intermediate- and high-risk patients, "stress imaging perhaps will be most effective for identifying flow-limiting disease because the question there is not just whether you've got disease, it's what are you going to do with that disease which really matters in the end," he observed.

Newer technologies like FFRCT are "promising" but require further evaluation to prove cost-effectiveness," Di Carli concluded.

Sources

Newby D. Cardiovascular CT is the test of choice in stable angina. Presented at: SCCT 2017. July 8, 2017. Washington, DC.

Di Carli. Do functional testing first in stable patients. Presented at: SCCT 2017. July 8, 2017. Washington, DC.

Disclosures

Newby reports receiving honoraria and serving as a consultant for Toshiba Medical Systems and receiving a Wellcome Trust Senior Investigator Award.

Di Carli reports receiving grant/research support from Spectrum Dynamics and serving as a consultant to Sanofi.

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