

TOP STORIES

SCCT Feature: Poll reveals changes in perceived cardiac CT appropriateness



Since the Appropriateness Criteria for cardiac CT (CCT) was published in 2006, the modality has experienced rapid growth in technology and clinical use. When the American College of Cardiology (ACC) formally reviews the criteria next year, there might be room to add more indications to the "appropriate" category, including the "triple rule-out" exam, according to a study presented at the Society of Cardiovascular Computed Tomography (SCCT) meeting in Orlando, Fla., last week.

Salvatore Carbonaro, MD, a cardiology resident at Walter Reed Army Medical Center, Washington, D.C., and colleagues polled 72 international experts in the field of CCT (40 cardiologists, 32 radiologists) to determine their agreement with the original criteria.

The researchers found that five of 12 previously "uncertain" indications shifted to "appropriate," resulting in 18 appropriate of 39 possible indications. Conversely, all previously "appropriate" indications remained so.

Indications that shifted from "uncertain" to "appropriate" were:
the use of CCT angiography (CCTA) to evaluate low-risk patients with acute chest pain, no electrocardiogram changes and negative serial cardiac markers;

- the use of CCTA to evaluate bypass graft patency in patients with acute chest pain;
- the use of the triple rule-out to exclude obstructive coronary artery disease (CAD), pulmonary embolism and aortic dissection in the emergency setting;
- the use of CCTA for preoperative risk assessment in select patients; and
- the use of CCT for calcium scoring for risk assessment in asymptomatic patients with moderate Framingham risk.

Among the 14 previously "inappropriate" indications, 10 shifted to "uncertain," and none to "appropriate."

The four indications that remained consistently "inappropriate" were:

- the use of CCTA in the assessment of acute chest pain in patients with high pretest probability of CAD and evidence of active myocardial infarction;
- the use of CCTA in risk assessment of asymptomatic patients with low Framingham risk;
- the use of CCTA in risk assessment of asymptomatic patients with high Framingham risk and prior calcium score of 400 or greater; and
- in the evaluation of left ventricular function after myocardial infarction or in new onset heart failure when alternative imaging is feasible.

Investigators found no significant differences between U.S. and non-U.S. expert respondents, or between the cardiology and radiology respondents, in the overall appropriateness category ratings.

However, statistical differences between cardiologists and radiologists were present for three indications:

- the evaluation of bypass grafts in the setting of chest pain syndrome;
- the evaluation of suspected aortic dissection or aneurysm; and
- the evaluation of suspected pulmonary embolism.

"While both groups favored more appropriate use of CCTA for graft assessment, radiologists statistically favored the move to 'appropriate' from 'uncertain' for this indication more than cardiologists. Small differences in the other two indications, while statistically different, failed to result in a shift in category assignment from 2006—both remained appropriate," Carbonaro said in an interview.

The largest magnitude of shift (four points) occurred in the use of CCTA for risk assessment in patients with intermediate

preoperative risk before low-risk surgery, resulting in category reclassification from "inappropriate" to "uncertain."

The only indication with a negative point shift (-1) was the use of CCT for vein mapping before biventricular pacemaker lead placement. This shift, however, did not result in an overall change in category assignment from its original 2006 classification as "appropriate."

Perhaps one of the biggest surprises is the triple-rule-out being deemed appropriate. "Previously, the concern was with the radiation dose, which was in excess of 20 mSv," Carbonaro said. "This scan can now be performed with a much lower dose, less than 5 mSv."

Carbonaro and senior author Allen Taylor, MD, co-director of noninvasive imaging at Washington Hospital Center, Washington, D.C., both stressed that this study is not a formal review, that it is opinion, and that the ACC assessment may differ.

"This study gives us a forward look into where the field is moving. These are experts who use cardiac CT every day," Taylor said.

Respondents even proposed new clinical indications for CCT. The most frequently listed in decreasing order were:

- use of CCTA for CAD evaluation before valve surgery;
- anatomical assessment before percutaneous device closure of atrial or ventricular septal defects, or percutaneous aortic valve replacement;
- use of CCTA in the evaluation of complex lesions before PCI (i.e., chronic total occlusions, bifurcating lesions);
- assessment of myocardial viability by late enhancement;
- assessment of right ventricular (RV) function and morphology (in suspected arrhythmogenic RV dysplasia and pulmonary embolism);
- myocardial perfusion assessment;
- coronary plaque characterization;
- evaluation of unknown graft anatomy before conventional coronary angiography or PCI ;
- evaluation of pacer lead placement; and
- in lieu of serial invasive coronary angiography following heart transplantation.

Last Updated (Friday, 24 July 2009)

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