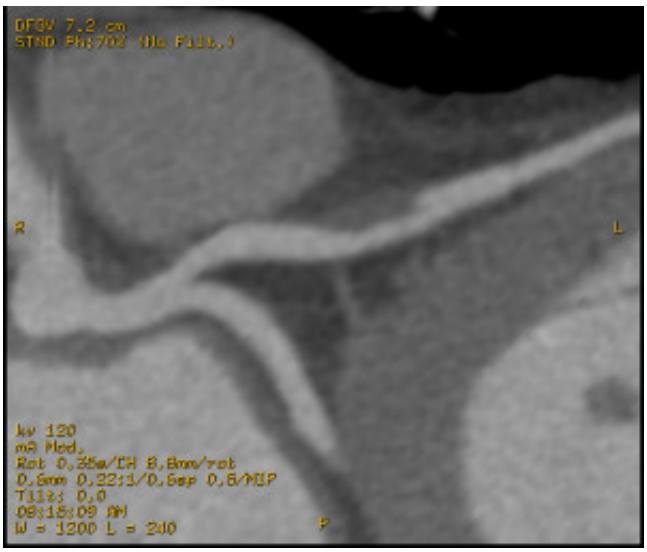
What does the PROMISE trial mean for cardiac CT?

Current guidelines recommend functional testing (FT) such as exercise tests or nuclear tests (with very high radiation exposures) to identify those patients who have chest pain that may benefit from stents or bypass surgery. Unfortunately, a vast majority of patients who have undergone invasive angiography (cardiac catheterization, at an average cost of $11,000) after exercise testing or nuclear testing, have normal studies. Thus the exercise test identifies the wrong cohort to go to for invasive testing with a false positive rate of 55-62%. Almost 2/3 of all patients who go the invasive lab (with risk and cost) have normal or near normal coronary arteries and do not benefit (but may be harmed) by invasive testing.



Remarkably, PROMISE (PROspectiveMulticenter Imaging Study for Evaluation of chest pain) reproduced these disappointing results of clinical practice in a current study design. In PROMISE, 72.1% of patients undergoing invasive angiograms after cardiac computed tomography had real obstructive disease in their coronary arteries, compared to only 47% of functional-test (exercise test, nuclear or stress echocardiogram) patients. The study showed, with high precision, that cardiac CT angiograms afforded a better accuracy to identify patients going to the cardiac catheterization laboratory, with a significant reduction in false positive examinations. Furthermore, while the final results did not show one superior to the other as far as who suffers a heart attack, the investigators noted several advantages of cardiac computed tomography over functional exercise testing. They include a significant reduction of heart attacks and cardiac death at one year follow up for those undergoing cardiac computed tomography instead of functional testing ($p = 0.049$) and much greater use of preventive therapies.

At 60 days, relative to baseline, the CTA strategy was associated with a higher proportion of patients newly initiating aspirin (11.8% vs. 7.8%), statins (12.7% vs. 6.2%), and beta-blockers

(8.1% vs. 5.3%), compared to functional testing (p less than 0.0001 for each). The proportion of patients reporting healthy eating was also higher after CTA (p = 0.002) while obese/overweight status was lower (p = 0.040). Benefits of CTA for aspirin, statins, healthy diet, and weight-loss persisted after adjusting for initial test results and revascularization.

“Among patients with suspected CAD, anatomical testing is associated with greater favorable changes in preventive medical and lifestyle practices. This may represent a long-term benefit of a CTA testing strategy.” Thus, with better identification of those persons with chest pain who need to go for invasive therapies, and more patients identified who benefit from healthy changes such as cholesterol and aspirin medications, blood pressure medications, weight loss and healthy diet were all better in those patients who ‘saw their arteries’ with cardiac CT (and could be identified with mild or severe blockages), rather than being subjected to a stress test that is only looking for severe blockages (perhaps too little too late).

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