TOP TEN THINGS TO KNOW
Noninvasive Coronary Artery Imaging: Magnetic Resonance Angiography and Multidetector Computed Tomography Angiography

1. Over the past 15 years, substantial advances have been made in noninvasive cardiac imaging in general and visualization of the coronary arteries in particular. This scientific statement, discusses two noninvasive modalities – magnetic resonance angiography (MRA) and computed tomography angiography (CTA) - that may be used for coronary artery evaluation.

2. Coronary MRA does not require contrast injection and no radiation is required.

3. Coronary CTA requires rapid bolus injection of an iodinated contrast agent. A beta blocker is frequently administered to reduce heart rate during the examination.

4. Coronary CTA can expose the patient to considerably higher amounts of ionizing radiation than standard radiographs, CT calcium scoring or x-ray angiography. Techniques to reduce radiation dose by up to 50% may be available and should be considered.

5. Coronary CTA technology has rapidly developed, and results using 64 slice scanners (64 detector beds acquire image data simultaneously) appear superior to prior results with 16 slice scanners.

6. The spatial resolution of coronary CTA is superior to that of MRA, so that complete evaluation of all major coronary artery segments is more reliably evaluated using CTA.

7. Evaluation of proximal coronary artery anomalies may be reliably performed with either MRA or CTA. Lack of associated radiation favors MRA when the technology is available.

8. Neither MRA nor CTA is currently recommended to “screen” patients for coronary artery disease.

9. The potential benefit of noninvasive angiography is likely to be greatest for patients at intermediate risk for coronary artery disease, after initial risk stratification, including patients with inconclusive stress results. Diagnostic accuracy favors CTA over MRA for these patients.

10. Multi-vendor, multi-center trials for coronary MRA and CTA are recommended to further assess the general applicability of these methods.

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