

Radiology

New CT scanner at UCLA is among the first in the country and offers advantages in diagnosing coronary artery disease

Care for coronary artery disease is currently moving to a more aggressive model, emphasizing prevention and targeting people who are at risk for developing the condition in order to make the diagnosis early. The traditional model has been to wait for symptoms to present and then try to find their cause; but with coronary artery disease, by the time symptoms appear, a significant blockage of the artery exists so that the blood supply to the heart is compromised or completely cut off. Traditional diagnosis using angiogram presents too great a risk for patients who are asymptomatic or who have only subtle symptoms. The changing approach to aggressively diagnose early calls for less invasive diagnostic tests.

Coronary artery disease diagnosis without angiography

As the need for non-invasive diagnostic tests has grown, advances in technology have changed what diagnostic imaging can accomplish in pinpointing coronary artery disease. With 64-slice CT (computed tomography) scanning, 64 detectors acquire image data simultaneously, with each detector completing an image in just one-third of a second. Both faster and more sensitive than previous technologies, the 64-slice CT scanner completes a full scan in just 10 seconds and produces high-resolution images that allow physicians to see fine details of the patient's coronary arteries.

Most recently, dual-source 64-detector CT has been introduced. UCLA currently has the only such scanner on the west coast and one of only a few in the U.S. It incorporates two X-ray sources and two 64-row detectors in a single scanner. Dual-source 64-detector CT has the ability to capture imaging data twice as fast as the most advanced 64-detector multi-slice CT technology. This enables the acquisition of motion-free cardiac images, regardless of heart rate. The new technology makes it unnecessary to administer beta blockers and wait for a patient's heart rate to be brought down to 60 beats per minute.

The new scanner's ability to use higher energy levels than single-source CT scanners enables physicians to capture detailed images of obese patients, whose size can often compromise image quality. Because the dual-source 64-detector CT is faster than the previous CT technology, there is no increase in patients' radiation exposure even at higher energy levels. With a wide bore opening, the scanner can accommodate obese patients who may not fit comfortably in traditional CT scanners.

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Dual-source 64-detector CT provides a non-invasive approach to early and advanced diagnosis of coronary artery disease. By virtue of its speed and the coverage offered by 64 detectors and two X-ray sources, this procedure offers frozen images of the heart, without the motion blur that typically presents problems in cardiac imaging. The data acquired during the scan produces three-dimensional images that allow physicians to view the coronary arteries in whatever plane is most helpful to make a diagnosis.

Due to these advantages, dual-source 64-detector CT competes with traditional two-dimensional angiography, which remains the gold standard of coronary artery visualization due to its still unmatched speed and resolution. But the new procedure does add an important new non-invasive tool to the diagnostic armamentarium available to help combat coronary artery disease.

A useful new tool for screening and assessing

The dual-source 64-detector CT scanner may be used to screen for evidence of plaque or stenotic disease in a patient's vessels. The American Heart Association is currently recommending that for patients with indeterminate risk factors for coronary artery disease, fast CT scanning be used to help determine if they should be on cholesterol-lowering drugs.

Dual-source 64-detector CT scanning can also be used to assess the status of previous surgical repairs to the heart. With a contrast agent introduced through a vein in the patient's arm, UCLA radiologists can determine if a previous graft or stent is open or closed to blood flow without the need for a more invasive procedure.

A growing area of use for dual-source 64-detector CT scanning is in patients being evaluated for coronary artery disease. For those who are judged unlikely to require a procedure, cardiologists can request a dual-source 64-detector CT scan to assess whether the vessels are obstructed or are beginning to become obstructed.

Patient referral

To schedule a patient for 64-slice CT scanning or for more information, please call (310) 301-6800 or fax (310) 794-9035. You can also visit our website at www.radiology.ucla.edu.

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