Heart-healthy technology

How new CT scanners are improving cardiac care

Interviewed by Chelan David

Innovation is a powerful tool, especially in the field of medicine, where it can save lives. The latest advancement, a new generation of noninvasive scanners, allow physicians the capability to provide early-stage cardiovascular diagnostics. The goal is to detect potential heart problems early, before any damage is done.

"Traditionally, the workup for heart disease started with the onset of chest pain and the whole target was the managing of clinical heart disease," says Jonathan Goldin, M.D., Ph.D., associate professor of cardiothoracic radiology at UCLA Medical Center. "Now the target is identifying early vascular disease way before symptoms develop."

Goldin spoke with Smart Business about precautions that can be taken against heart disease and the benefits that the new CT scanner provides patients.

What steps can be taken to safeguard against future heart conditions?

It starts with good eating habits and regular exercise — following the American Heart Association recommendations for at least 30 minutes of exercise five to seven days a week. It also includes a regular visit with your physician and/or cardiologist, screening for your cholesterol levels and aggressive management of cholesterol.

In addition, once you have done all of those things, there are new technologies now available that allow us to look at the vessel and assess its degree of blockage early on, way before symptoms develop.

What are some of the benefits that a 64-slice CT scanner provides for patients?

One benefit is that of patient comfort. Traditionally, the only way to look at blood vessels directly has involved the threading of a catheter through the blood vessels, then through the heart directly into the coronary arteries.

While this is a procedure that’s done thousands of times a day across the country and has become a very safe clinical modality, it is invasive, uncomfortable, takes a fair amount of time and it requires highly skilled operators, so there is an expense factor involved.

What has happened with the advent of fast CT scanners is the ability to acquire very good images of the vessels while the patient lies on a CT scan machine in a regular outpatient setting. All they need is a small needle placed in the back of their forearm, which is much less invasive.

The other benefit is that the technology allows 3-D visualization of the wall inside and out, as well as the lumen of the central part of the vessel.

What are some of the advantages of the new scanner versus past models?

The essence of cardiac imaging from a CT or MRI point of view is speed of acquisition. There have been several generations of CT scanners that have all purported to get good images of the coronary arteries, but the reality is that we’re only now reaching a generation of scanners that is getting the time-resolution speed of acquisition that allows you to get virtually frozen images to evaluate.

Sixty-four-channel CTs represent a quantum improvement and a significant step up in the platforms of the CT machines.

Will advances in technology such as the new scanner eventually help health insurance premiums decline as diseases are detected earlier?

That is certainly the hope and what we in the research world believe is the absolute goal of the translation of this technology into clinical practice. One of the things that we have to look at is how to get insurers more proactive and supportive of primary prevention as a strategy.

What we really need is for insurers, and in fact for many physicians, to change the paradigm for the treatment of disease to the prevention of disease. These technologies clearly offer an opportunity to accelerate this process.

What future advances do you envision in the field of heart disease diagnostics?

In the CT and MRI world there will be faster scanners still to come. We’re now talking about dual-detector scanners that offer double the speed of acquisition. Other manufacturers have gone to double the number of detectors from 64 to 128 in another approach to try and increase the coverage.

We’ll see increases in speed and resolution continue, probably less big steps than we see now, but certainly incremental improvements. We’ll also see improvements in the software that is used to analyze the vessels.

Currently, they are a little time-consuming to use, but they’ll become more automated, which will decrease user time in putting together the interpretations.

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