Coming Soon to EDs: The Speedy 'Triple Rule Out'

BY ROBERT FINN
San Francisco Bureau

SAN FRANCISCO — Chest pain represents one of the most common presenting symptoms in the emergency department, and it also represents a diagnostic challenge: Is it a pulmonary embolism? Is it an aortic dissection? Is it coronary artery disease? Or is it nothing?

Now, new CT technology promises to revolutionize this diagnosis, giving the ability to rule out all three conditions with a single 15-second scan.

In theory, this scan can replace stress testing for coronary artery disease, echocardiography or CT for aortic dissection, and CT pulmonary angiography or a ventilation-perfusion scan for pulmonary embolism, Dr. Matthew J. Budoff, M.D., said at a cardiovascular imaging conference sponsored by the American College of Cardiology.

Although no diagnostic or prognostic studies on the triple rule out have yet been published, there's some indication that the single scan will have 90% accuracy or better for each of the three conditions, said Dr. Budoff of Harbor-UCLA Medical Center in Torrance, Calif.

The technology involves a 64-slice CT scan from the apex to the base of the lungs.

Patients will have to hold their breath for 20-30 seconds as contrast is injected and the images are acquired. Acquisition of the slices will be gated to the heart's rhythm, allowing for stable, high-resolution images of the heart and lungs. The slice thickness will be 0.625 mm.

Software and a sophisticated workstation will allow the clinician to construct three-dimensional images of the heart, lungs, or aorta, and to manipulate three-dimensional and two-dimensional images in a variety of ways.

In addition to aortic dissection, pulmonary embolism, and coronary artery disease, the technique will allow clear views of the pericardium, permitting the diagnosis of calcified or thickened pericardium and sometimes pericarditis.

In addition, "you might pick up pneumonia, and you might pick up pulmonary adhesions or even pericardial adhesions," Dr. Budoff said.

"There are a lot of things you could possibly see. And it could be done during the chest pain episode, which is a great advantage over some of the other modalities where you'd want to wait until their chest pain is quiescent."

Dr. Budoff described the case of an elderly woman who complained of chest pain and shortness of breath.

Because of her age, he was reluctant to order a stress test. The CT angiography showed that her coronary arteries were normal and that her ejection fraction was acceptably high. When he examined the lung images closely, however, he discovered several pulmonary emboli.

"We admitted her to the hospital, put her on heparin, and it all cleared up," he said.

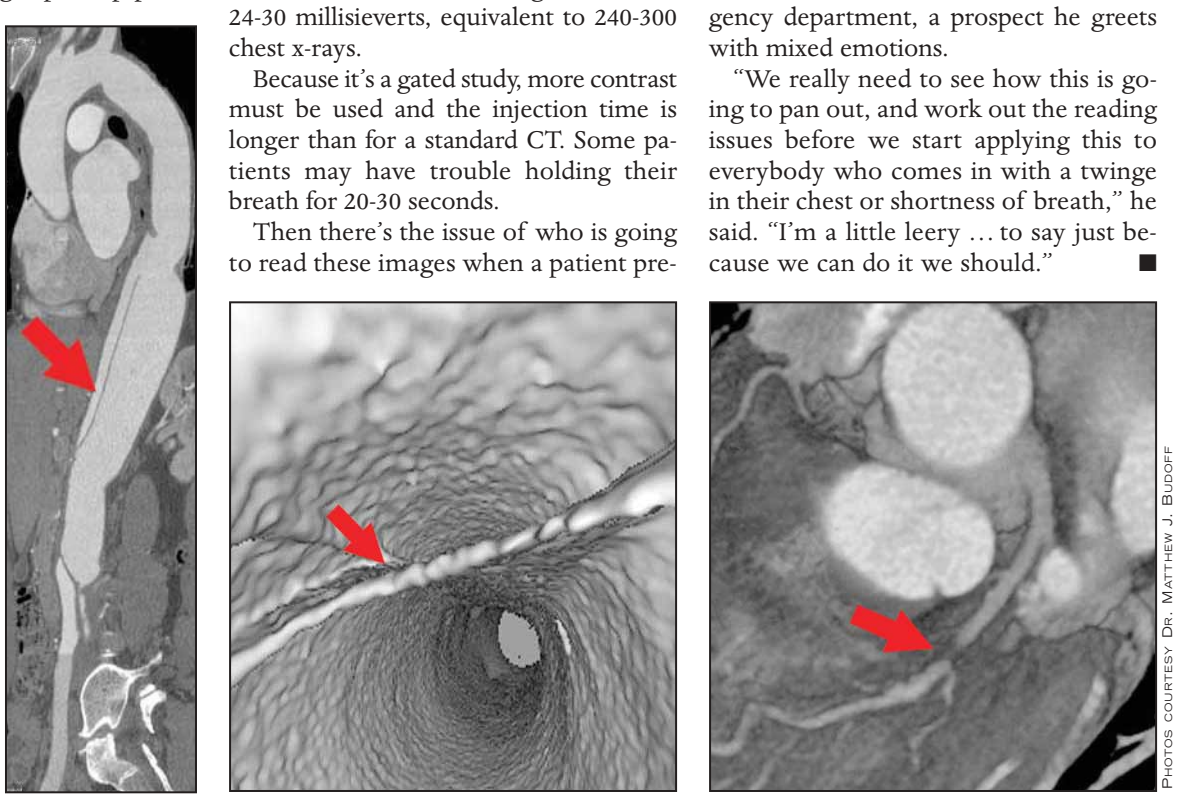
Despite its promise, the triple rule out does have some limitations. For one thing, it subjects patients to a relatively high dose of radiation—in the neighborhood of 24-30 millisieverts, equivalent to 240-300 chest x-rays.

Because it's a gated study, more contrast must be used and the injection time is longer than for a standard CT. Some patients may have trouble holding their breath for 20-30 seconds.

Then there's the issue of who is going to read these images when a patient presents to the emergency department at 3 a.m. The radiologist staffing the emergency department may not be facile with cardiac CT angiography. Although the images could be transferred over data lines, the cardiologist is not likely to have a workstation with the proper software at home. In all likelihood, someone will have to come to the hospital to read the study.

Still, Dr. Budoff expects the triple rule out to become a routine test in the emergency department, a prospect he greets with mixed emotions.

"We really need to see how this is going to pan out, and work out the reading issues before we start applying this to everybody who comes in with a twinge in their chest or shortness of breath," he said. "I'm a little leery … to say just because we can do it we should." ■



PHOTOS COURTESY DR. MATTHEW J. BUDOFF

On the left: an aortic dissection appears as a long, thin dissection flap in the descending aorta. In the center: an endoscopic view of the aortic dissection shows the true lumen (larger area) and false lumen. On the right: a high-grade stenosis is shown in the mid-left anterior descending artery.

Stent Thrombosis Rate Less Than 1% During First 1.5 Years

BY MITCHEL L. ZOLER
Philadelphia Bureau

STOCKHOLM — Less than 1% of patients who receive a drug-eluting coronary stent develop late stent thrombosis during the first 1.5 years after implantation, on the basis of a study in more than 2,000 patients.

While these and earlier findings showed that drug-eluting stents are "relatively safe" during the long term, they also highlighted the need for patients who receive a drug-eluting stent to unceasingly remain on daily aspirin therapy, Andrew T.L. Ong, M.D., said at the annual congress of the European Society of Cardiology.

Stopping aspirin is an "absolute contraindication," he said in an interview. "In today's day and age there is no surgery that requires stopping aspirin," said Dr. Ong, a cardiologist at Thoraxcenter Rotterdam (the Netherlands).

"Every patient who gets a drug-eluting stent should receive a 'passport' " that tells all of the patient's other physicians not to stop aspirin without consulting the ones who placed the stent, commented Luis Gruberg, M.D., director of the division of invasive cardiology at the Rambam Medical Center in Haifa, Israel.

The link between late stent thrombosis and stopping aspirin and other antiplatelet therapy was underscored by the new incidence data, collected on all 2,006 patients who received a drug-eluting, coronary stent at Thoraxcenter since April 2002. The total included 1,017 patients who received a sirolimus-eluting stent (Cypher), and 989 who received a paclitaxel-eluting stent (Taxus). Each patient received an average of 2.3 stents. During an average follow-up of 1.5 years, seven patients (0.35%) developed late stent thrombosis, defined as an abrupt stent occlusion that developed more than 30 days after stent placement. One patient had two stents that each had late thrombosis.

When analyzed statistically, the upper 95% confidence interval on the rate of late thrombosis was 0.72%, which means that it is very likely that the "real" rate of late thrombosis is 0.72% or less, said Dr. Ong.

The rate in this series was strikingly similar to a 0.7% rate reported last May for a series of 2,229 patients who were treated at three hospitals in Germany and Italy (JAMA 2005;293:2126-30). That study and the one presented by Dr. Ong are the first two reports to calculate a rate of late thrombosis in a large, well-defined number of patients who got drug-eluting stents. This rate is also similar to what has been reported for bare metal stents, said Dr. Ong.

Of the eight stents with late thrombosis in the Thoraxcenter series, three were in patients who had stopped both aspirin and clopidogrel (Plavix) treatment, while the other five were in patients who had stopped clopidogrel but had continued aspirin. Cardiologists at Thoraxcenter now usually prescribe clopidogrel for 6 months following stent implantation.

The drug can be continued longer term, but in the Netherlands most insurers will only pay for a 6-month course. All seven patients had ST-segment elevation myocardial infarctions as a result of the stent thrombosis, and two patients also had shock and died.

Following Dr. Ong's talk, several cardiologists from the audience spoke about the need for patients with drug-eluting coronary stents to stay on daily aspirin, and they discussed the best way to get this message to the primary care physicians who care for these patients after they receive stents.

Many spoke in favor of giving each patient a "passport" that would review their medical history and that patients would be told to show to all of their other physicians.

"It's important to get the message to other physicians. … There is no reason why a patient can't stay on aspirin and have surgery," Dr. Ong said. ■

Defibrillators Recalled Due to Electrical Short

MRL Inc. is recalling AED20 automatic external defibrillators (part No. 972200E) because the devices are susceptible to a malfunction that can prevent delivery of a shock. A complaint of malfunction that resulted in a death in Canada led to the recall.

The malfunction occurs when impact to the exterior of the AED20 causes an internal electrical short, resulting in failure to analyze the patient's heart function. When the malfunction occurs during clinical use, the device displays a "Defib Comm" error message. The company is providing customers with a loaner AED20 at no cost while their unit is serviced. Consumers may call the company at 847-520-0300, extension 153.

—Kerri Wachter