



Radiology Today

MUSC's edge in dual source CT scanner draws researchers from several countries

Radiologists are raving about the capabilities of the dual source CT scanner which came on the market in July 2006 and was in use at MUSC in early October. Only a handful of hospitals in the country have the



U. Joseph Schoepf, M.D.

new scanner and MUSC's position as an early user of the latest technology has drawn radiologists here from about a dozen countries including Austria, Germany, Hungary, Italy, Korea, and Singapore.

MUSC enjoys pre-eminence thanks to its long-standing ties with leading manufacturers and its nucleus of

highly regarded radiologists and supporting staff. "The manufacturers know we are very active in research and can help them. High-end technology in turn attracts top people," says U. Joseph Schoepf, MD, director of MUSC's CT research and development, who, along with Radiology Chairman Philip Costello, MD, came to MUSC in 2004 from Brigham and Women's Hospital in Boston.

The dual source CT scanner is considered a breakthrough over "64-slice" CT technology, which as recently as a couple of years ago was itself hailed as a major advance. "Radiology is indeed a pace-setter



in medicine. Hardly any field is quite as dynamic," notes Dr. Schoepf. The dual source scanner derives its name from the fact it uses two x-ray tubes and two detector arrays. This enables it to take vivid, marvelous images of the heart – not a simple task given the heart's continuous and often erratic pulsations.

Clinicians previously countered that by using beta-blockers but, aside from the ensuing delay, not all patients can tolerate the drugs. "The dual source scanner obviates the need for beta-blockers because it enables us to freeze the image of the heart. The superior temporal resolution produces motion-free images regardless of the cardiac phase," explains Dr. Schoepf. Another immense advantage is that the new scanner can acquire images of the heart in five to ten seconds. Regular body CT scans that are not synchronized to the patient's heart beat can be performed even faster. That's quite a boon in pediatric and trauma patients.

All of these advantages add up to one great benefit: many patients who previously had to undergo angiography to detect or rule out heart disease can now be examined on an out-patient basis by the simpler, less intrusive, and far less expensive CT procedure. Typical charges for an angiogram range from \$5,000-\$6,000 compared to approximately \$1,800 for the dual source CT scanner.

The new scanner, expected to be most useful in patients who appear to be at low-risk for heart disease, will see more frequent use when MUSC opens a dedicated cardiovascular center including a chest pain unit in its new hospital. "We see the dual source scanner as performing a gate-keeper procedure. It will enable us to differentiate patients who truly need angiography from those that are not likely to benefit from it," Dr. Schoepf says.

Chairman's note

Both MUSC and its radiology department are on the threshold of a dynamic new era, with a state-of-the-art hospital almost completed and the introduction of exciting modalities such as functional MRI, PET/CT and dual source CT.



Philip Costello, M.D. F.A.C.R.

We are pleased to present the inaugural issue of *MUSC Radiology Today*, the quarterly newsletter of the radiology department. Both MUSC and its radiology department are on the threshold of a dynamic new era, with a state-of-the-art hospital almost completed and the introduction of exciting modalities such as functional MRI, PET/CT and dual source CT. Our newsletter will keep you updated on emerging developments as MUSC radiology builds on its considerable strengths to achieve renown as one of the best medium-sized academic radiology programs in the United States.

We very much need and welcome your suggestions in developing this newsletter. It is a measure of our progress and sophistication that no one individual can hope to keep up with all that's new and promising in research, clinical use, in the lab, and on the horizon. For *MUSC Radiology Today* to reflect accurately and comprehensively all that our department has to offer we need your guidance and participation. Please e-mail ideas for future contributions to this newsletter to Adrian Parker, program manager.

WELCOME NEW RESIDENTS

We are pleased to welcome our incoming residents:

- Marques Bradshaw, Duke University Medical School
- Richard Coursey, University of Texas, Galveston
- Mike Hanley, University of Virginia
- Jay Koonce, University of Tennessee
- Madelene Lewis, Brody School of Medicine, NC
- Josh McCain, Mercer University, GA
- Melissa Picard, Medical University of Ohio
- Pal Suranyi, University of Alabama

MUSC

Radiology Today



MUSC Radiology Today is produced quarterly by the radiology department at the Medical University of South Carolina.

Chairman: Philip Costello, M.D., F.A.C.R. (costell@muscd.edu)

Editor: Adrian Parker, program manager (parkerad@muscd.edu)

Writer: Mobashir Salahuddin (msalahuddin@sc.rr.com)

More demand seen for MRI scans in women

Two widely publicized reports call for greatly expanded use of MRI scans in women who have breast cancer or are at high risk for it. One report is a set of new guidelines from the American Cancer Society and the other is a study in *The New England Journal of Medicine* showing that in women who have newly diagnosed cancer in one breast, MRI can find tumors in the other breast that mammograms miss. Women with a personal history of breast cancer have a 2- to 6-fold increased risk of breast cancer in the contralateral breast. The cumulative incidence of contralateral breast cancers is 7% over 10 years.

"The new advice could add a million or more women a year to those who need breast magnetic resonance imaging — a demand that radiologists are not yet equipped to meet, researchers say," according to the *New York Times*, which added that professional societies in radiology were scrambling to provide training and accreditation for the scans.

Insurers will probably cover the scans because the new guidelines are based on good evidence and promoted by a respected medical group, said Peter V. Lee, president of the Pacific Business Group on Health, a nonprofit coalition of large buyers of health care that cover about five million people.

Not every imaging center is qualified to perform such scans, but some that are not up to par may offer it anyway, so patients must beware. If the breast scan is done at a center that cannot perform biopsies, a woman with a suspicious finding may have to start all over again at another clinic, authorities cautioned.

Most high-risk women should begin getting MRIs and mammograms at age 30, the American Cancer Society says, unless they and their doctor think it's better to begin at a different age. For some women, however, the jury is still out on whether MRI screening is beneficial, even though they have conditions that do give them a higher-than-average risk of breast cancer. The guideline says there still isn't enough evidence to recommend for or against MRI screening in women who:

- have a 15%-20% lifetime risk of breast cancer, based on one of several accepted risk assessment tools that look at family history and other factors

- have lobular carcinoma in situ (LCIS) or atypical lobular hyperplasia (ALH)
- have atypical ductal hyperplasia (ADH)
- have very dense breasts or unevenly dense breasts (when viewed on a mammogram)
- have already had breast cancer, including ductal carcinoma in situ (DCIS)

The new guideline is published in the latest issue of the ACS journal *CA: A Cancer Journal for Clinicians*. It recommends MRI screening in addition to mammograms for women who meet at least one of the following conditions:

- they have a BRCA1 or BRCA2 mutation
- they have a first-degree relative (parent, sibling, child) with a BRCA1 or BRCA2 mutation, even if they have yet to be tested themselves
- their lifetime risk of breast cancer has been scored at 20%-25% or greater, based on one of several accepted risk assessment tools that look at family history and other factors
- they had radiation to the chest between the ages of 10 and 30
- they have Li-Fraumeni syndrome, Cowden syndrome, or Bannayan-Riley-Ruvalcaba syndrome, or may have one of these syndromes based on a history in a first-degree relative

Clinical indications for breast MRI:

- Implant evaluation
- Axillary carcinoma of unknown primary

Breast cancer patients:

- Ipsilateral extent of disease
- Contralateral breast screening for occult disease
- Post-surgical with positive or close margins
- Response to neoadjuvant chemotherapy

Screening of women at high risk

If you have any questions regarding Breast MRI please contact one of our mammographers: Susan Ackerman, Abid Irshad, or Thomas Pope. If you want to order a breast MRI on one of your patients please call 792-9729 in order to schedule it.

CALENDAR of events

- May 17-18 The Charleston Course on Cardiothoracic Imaging, MUSC
- May 19-25 International Society for Magnetic Resonance in Medicine, Fifteenth Scientific Meeting & Exhibition, Berlin
- May 19-23 American College of Radiology Annual Meeting and Chapter Leadership Conference 2007, Washington Hilton, Washington, DC
- June 2-6 SNM's Annual Meeting, Washington, DC
- June 9-14 American Society of Neuroradiology 45th Annual Meeting and Neuroradiology Education and Research Foundation Symposium 2007, Hyatt Regency Chicago, Chicago
- June 13-16 Stanford Radiology Presents: 9th Annual International Symposium on Multidetector-Row CT, Hyatt Regency, San Francisco
- August 5-9 Society of Computed Tomography-Magnetic Resonance, Banff, Canada
- September 13-14 The Charleston Course on Cardiothoracic Imaging, MUSC

PREVENTING STROKES

MUSC radiologist seeks FDA approval for invention

The Medical University of South Carolina is one of 30 centers nationwide testing a new cerebral protection device for carotid artery stenting, invented by Juan Carlos Parodi, MD, of the University of Miami and Claudio Schonholz, MD, an interventional radiologist at MUSC.

"I'm excited because after working for so many years we are finally on track to have the device reviewed by the FDA," Dr. Schonholz says. The original Parodi Anti-Embolism System has been in use in Europe since 2001. The second-generation version, being tested at MUSC and other centers in the United States under the so-called EMPIRE study, is known as the GORE Neuro Protection System. The study is sponsored by the medical products division of W.L. Gore & Associates.

What is original about the GORE Neuro Protection System is that it has the potential to be a superior way of capturing particles (to prevent distal embolization) released as a byproduct of mechanical widening of the



Claudio Schonholz, M.D.

carotid artery during carotid artery stenting (CAS). CAS is a relatively new technique for treating patients with carotid artery disease, which can lead to stroke. Researchers have long recognized the need to protect the brain during carotid stenting because distal embolization can lead to stroke or death.

However, none of the devices in use are 100% effective in capturing particles released during carotid stenting.

The Gore Neuro Protection System relies on reversing the flow of blood in the internal carotid artery to flush out the debris, which is captured in an external filter placed near the femoral artery. The entire procedure lasts about an hour and throughout the patient is awake and able to converse with clinicians.

The EMPIRE study has so far enrolled 75 patients nationwide, and needs about 300 patients to produce valid results. "I expect we'll get there in a year," says Dr. Schonholz, adding MUSC's radiology department has enrolled about 10 patients in South Carolina.