Physician Spotlight: Clint M. Gerdes, MD

MEDFORD RADIOLOGICAL GROUP'S NEWEST MEMBER

Dr. Gerdes received his medical degree from Creighton University, in Omaha, Nebraska. He completed his internship in internal medicine, and was the Chief Resident in Diagnostic Radiology, at the Ochsner Clinic in New Orleans, Louisiana.

Dr. Gerdes completed 14 months of MRI fellowship training, 2 months at Ochsner Clinic prior to Hurricane Katrina, and 12 months at the University of Wisconsin, in Madison. Both fellowships included training in advanced cardiovascular MRI, neuroradiology, abdominal and pelvic MRI, and musculoskeletal MRI.

MRG's practice now encompasses seventeen radiologists. All are certified by the American College of Radiology, and many are fellowship trained, having received certificates in neuroradiology, musculoskeletal MRI, angiography, nuclear medicine, and body CT subspecialties in diagnostic and interventional radiology.

livingimage

Oregon Advanced Imaging

Summer 2007

In this Issue

Oregon Advanced IMAGING

Phone: 541-608-0350
Toll free: 800-462-1098
Fax: 541-608-0376
www.oaimaging.com

Three convenient locations in Medford:

Navigator's Landing
881 O'Hare Parkway

Providence Medford
Medical Center
1107 Crater Lake Ave.

Rogue Valley Medical Center
545 Medical Center Drive

Advancements in MRI

MRI Remains One of the Leading Diagnostic Imaging Tools, but Which MRI is Best for Your Patient?

Without a doubt, magnetic resonance imaging (MRI) is one of the most important diagnostic imaging tools available to physicians. Although the technology is relatively new, the science of MRI has continued to address limitations in the original architecture and imaging process.

MRI scanners have evolved to provide open architecture that supports larger patients by increasing the size of the magnet opening and reducing the length of the bore. They have also improved the body coils and biopsy apparatus by decreasing their weight and honing the coil configurations. The improved coils assist in providing superior image quality and reduce the number of times a patient may need to be repositioned during a multiple scan.

The imaging process continues to improve with higher magnet strength scanners and more advanced CAD software that allows the radiologist to analyze the thousands of images produced per scan in more detail.

One of the most important advancements is increasing magnet strength, with 3.0 tesla (3T) MRI being the latest technological advancement in a long list of MRI imaging capabilities. With twice the magnet strength, 3T allows faster scanning times, higher signal-to-noise ratios, thinner image slices, and the ability to perform functional MRI exams. The clinical benefits of 3T MRI have been demonstrated in neuroimaging, magnetic resonance angiography, and many musculoskeletal procedures. The 3T strength also exhibits continued promise in contrasted abdominal imaging as well as cardiac and oncological MRI.

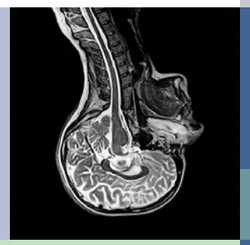
In a country with an abundance of MRI scanners, 3T technology accounts for less than 12 percent of the MRI volume nationwide. The new 3T magnet and associated coils have not completely replaced the role of the 1.5T workhorse and the cost of 3T technology is exceedingly higher than that of 1.5T MRI scanners with no reimbursement difference between the two technologies.

Although there are many clinical benefits of the new 3T MRI, there are also limitations. Certain metal devices and clips have yet to be 3T approved, necessitating that some patients be scanned in a 1.5T environment. The physics of technology and the the increased effects on patient physiology are other important considerations. Both play a vital role in sequence choices and contrast usage to ensure the utmost patient safety. Although 3T was originally designed as a neuromagnet, it is anticipated that this ultra-high-field magnet will change the course of imaging.

continued on next page....

Introducing

3T MRI technology



livingimage
PHYSICIAN NEWSLETTER

OAI is a community partnership of Rogue Valley Medical Center, Providence Medford Medical Center, and Medford Radiological Group.

Oregon Advanced IMAGING
P.O. Box 1527 | Medford, OR 97501
Phone: 541-608-0350 | www.oaimaging.com

PRSRT STD
U.S. POSTAGE
PAID
PERMIT #149
MEDFORD, OR

Advancements in MRI continued...

The questions that often plague physicians ordering MRI are: ***"Which technology is the best one for my patient?"*** and ***"Where should I send my patient for the best possible imaging procedure?"*** The right answer, more than likely, is "It depends". Although all MRI technology adds value, the right scanner is the one that provides the best image quality and results for the specific patient condition and diagnostic evaluation.

Oregon Advanced Imaging has expanded their selection of MRI technology to include the Siemens Magnetom Trio 3.0 tesla MRI for this very reason. The scanner has been added to OAI's array of diagnostic tools to provide expanded benefits for those specialized cases that will gain most from the higher magnet strength. The addition of the ultra-high-field magnet at OAI is the first in the region. "It is our intention to provide the best imaging tools available and the best interpretations to serve our referring physicians and their patients; 3T MRI will allow us to continue this," said Dr. Michael Troychak, Medical Director for OAI. Oregon Advanced Imaging and the radiologists at Medford Radiological Group are committed consultants working with referring physicians to recommend the best possible imaging technology for their patients.

Now local physicians who refer patients to OAI will have access to the 3T MRI, a selection of high-field 1.5T MRIs, and the diagnostic capabilities of PET/CT (positron emission tomography/computed tomography).

The Role of 3T Technology

Neurological Imaging

Neuroimaging has benefited greatly from the ultra-high-resolution image quality of a 3-tesla (3T) MRI. Numerous 3T applications have been developed specifically for brain and spinal cord magnetic resonance imaging.

In 2006 a study performed by a group of radiologists compared 1.5T with 3T images in 11 consecutive patients with multiple sclerosis. The 3T sequence capabilities were exploited to obtain additional and thinner slices in the same scanning time as the 1.5T. The images generated from the 3T were rated significantly superior in lesion conspicuity and diagnostic value. This increase of information and detail was identified despite an additional artifact notation. This research suggests that highly detailed 3T images may further strengthen the role of MRI as the most sensitive paraclinical test available for the early diagnosis of multiple sclerosis.

In a separate study, researchers used diffusion tensor imaging (DTI) in patients with known brain tumors or metastases to measure tissue disorganization. DTI is used to measure the restricted diffusion of water in tissue, with its principal application being imaging white matter. This sequencing identified high-grade gliomas that were faintly seen in conventional T2 weighted images. The researchers suggested that this finding indicated infiltration and may provide a useful method of detecting occult white matter invasion.

In European trials 3T neurofunctional MRI has been used to define the site and the extent of temporal lobe epilepsy foci for surgeons, to detect metabolic abnormalities associated with Alzheimer's disease, and to evaluate the brain patterns of depressed patients before and after pharmaceutical treatment.

Magnetic resonance (MR) neuroangiography has also been considerably enhanced with the use of a 3T magnet. Scanning speed and resolution have significantly improved image quality as well as reduced the volume of contrast needed.

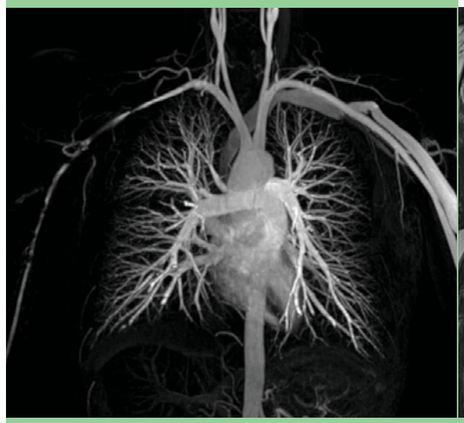
The 3T achieves unmatched contrast and microscopic resolution for neurological and vascular applications.

MR Angiography

MR angiography (MRA) image quality is dramatically improved with a 3T ultra-high-field-strength examination. Higher-resolution acquisitions provide radiologists with a visualization window of much smaller vessels. The improved signal and resolution clarity of 3T generates a greater response to contrast agents.

Dynamic contrast-enhanced angiography is a recent technique for visualizing the passage of blood through the arterial tree to the venous outflow. The 3T images outline a higher temporal resolution, allowing the investigation of blood flow abnormalities in stroke and vascular malformation. These superb images rival those of catheter X-ray angiography in the diagnosis of aneurysms and atherosclerotic diseases.

Three-tesla angiography provides an extraordinary assessment of both central and peripheral arteries. Rapid image acquisition also diminishes motion artifacts that often accompany MRA.



MRA with exquisite detail of the pulmonary vasculature.

With 50 percent more Matrix coil elements, the 3T gives you higher signal-to-noise ratio (SNR) with ultrafast scans for uncompromised image quality.

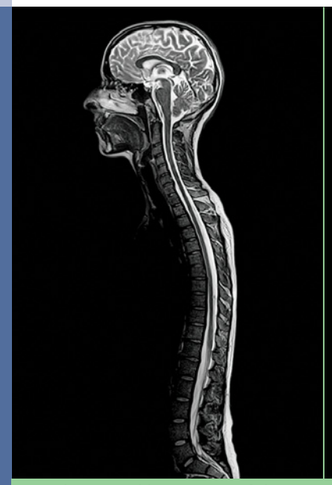
3T excels at imaging subtle differences in articular cartilage of the knee.

MRI Safety

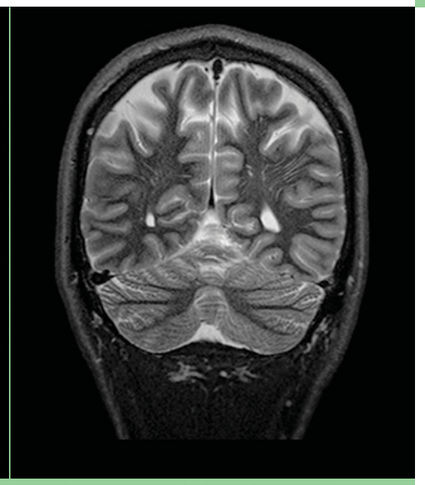
Is my Patient Safe when Entering an MRI Scanner?

At Oregon Advanced Imaging we often receive questions from our referring clinicians regarding whether their patient with a specific implant, prosthesis, or type of hardware can safely undergo MRI. We are always available to discuss your patient's specific situation. If you would prefer to check for yourself however you can go to the website the professionals use – www.MRIsafety.com.

The web site provides a searchable product list of virtually every type of medical device, with information on whether it is safe for each specific MRI environment. This site is free to users but requires registration and electronically signing the disclaimer.



The 3T enables imaging of the central nervous system without patient repositioning or coil reconfiguration.



With true isotropic high-resolution Multi-Planar Reconstruction (MPR) of the 3D data, free slice prescription after the scan is now possible, bringing CT-like post-imaging practices to MRI.

Musculoskeletal Imaging

For years MRI has provided an invaluable window into problems of the musculoskeletal system, with the 1.5T scanner serving as the standard. The 3T technology now provides a higher standard that promises even further improvements in orthopedic imaging.

Radiologists have enjoyed great success in assessing joint disease with MR imaging, though certain joint structures remain problematic. Many of these scans that are difficult to visualize have led to a prime opportunity for 3T musculoskeletal imaging. The articular cartilage of the knee, the glenoid labrum of the shoulder, the ligaments of the wrist, the collateral ligaments of the elbow, the labrum and articular cartilage of the hip, and the collateral ligaments of the ankle – all are challenging scans when using routine, nonarthrographic techniques. The image quality of 3T MRI supplies significant potential for improving diagnostic capability in those specific joints, enhancing patient care and management.

The 3T MRI for musculoskeletal diagnoses complements the conventional 1.5T MR system, particularly when evaluating a problematic joint and when a patient has difficulty remaining still during a scan, and it continues to show a further role in orthopedic medicine. High-field 1.5T MRI, however, remains the tried-and-true system, with a host of extremity coils that are not yet matched with 3T.

3T small-FOV acquisitions have far higher spatial resolution.

Oregon Advanced IMAGING

www.oaimaging.com