WorldCare Clinical
A PreScan Imaging Company

The WCC Note™

Presented by Stephen J. Pomeranz, M.D.

www.wcclinical.com / +1 617-250-5143

A Weekly Guide To Harmonizing Clinical Trial Imaging

Volume 2, Number 7 – March 21, 2008

READER SURVEY >>

PET SARCOMA

PET Accurate for Evaluation of Sarcoma Response to Therapy

Researchers from the University of Freiberg in Germany and UCLA performed FDG-PET/CT scans on 42 patients with proven high-grade, soft-tissue sarcoma, both before and after neoadjuvant therapy. These results were correlated with the histopathologic response of the tumor to the therapy, with greater than 95% tumor necrosis defined as histopathologic response. They found that tumor size measured on CT was not significantly different between responders and nonresponders, but FDG uptake was significantly greater in nonresponders. Using the RECIST (**R**esponse **E**valuation **C**riteria **I**n **S**olid **T**umors) criteria, which is based primarily on size changes, the sensitivity for histopathologic response was 25% with 100% specificity. In contrast, when using 60% decrease in tumor FDG uptake as a cutoff, sensitivity and specificity for histopathologic response were 100% and 71%. **Conclusion: PET is significantly more sensitive than size criteria in determining sarcoma histopathologic response to therapy.**[1]

CARDIAC MRI

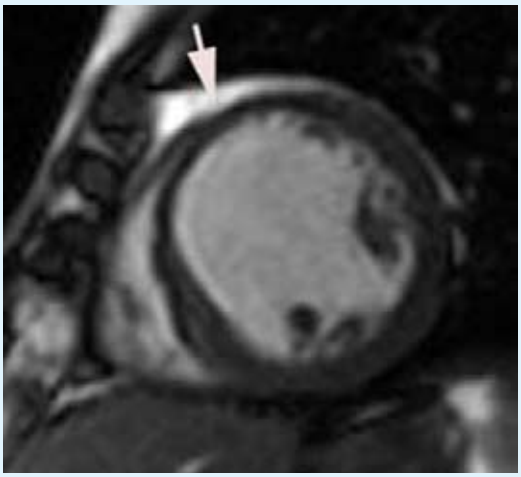
Cardiac MRI Shows Efficacy of Therapy for Iron Cardiomyopathy in Thalassemia

Patients with thalassemia often develop iron overload and iron deposits in the heart, predisposing them to arrhythmias and life-threatening cardiac complications. A clinical trial is being performed jointly at the Children's Hospital of Los Angeles and in Cagliari, Italy, using MRI to detect the amount of iron deposited in the heart after therapy with deferasirox, an iron chelating agent. Early results from the trial are now available. T2* MRI images, which are very sensitive to iron, showed that after six months of treatment the amount of iron in the myocardium decreased significantly. **Conclusion: Iron-sensitive MRI sequences show that deferasirox effectively removes cardiac iron in thalassemia patients.**[2]

CARDIAC MRI: THE BASICS

Imaging of the heart presents some unique challenges because of this vital organ's rapid, continuous motion. Previously, only techniques such as ultrasound (echocardiography), nuclear medicine, and fluoroscopy provided the temporal resolution necessary to visualize the heart in its various phases of contraction.

Recent technological advances, however, have allowed faster CT and MRI imaging, bringing these two modalities to the forefront of cardiac imaging. Both CT and MRI are obtained using EKG gating. This means that, during the scan, an EKG is used and directs images to be obtained at the end of diastolic relaxation (or systolic contraction), when the heart is relatively motionless for a fraction of a second.



Common Indications for Cardiac MRI:

Common Indications for Cardiac MRI:

CMR study showing thinning and hypokinesia of the anterior wall of the myocardium.

- **Ischemic heart disease**
  - MRI can determine many quantitative parameters such as stroke volume, ejection fraction, and cardiac output.
  - MRI evaluates myocardial contractility, and thus can detect areas of nonfunctioning heart tissue.
  - A unique and useful feature of MRI is its ability to differentiate areas of viable myocardium (which would benefit from revascularization) from nonviable myocardium (which is dead and would not benefit from this therapy) after an acute myocardial infarction.
- **Cardiac masses**
  - MRI provides detailed evaluation of anatomic relationships of masses in the heart.
  - The use of various MR pulse sequences and contrast allows more accurate determination of the type of mass than ultrasound.
- **Pericardium**
  - MRI provides detailed evaluation of the pericardium and allows one to distinguish masses, effusions, thickening, and inflammation.

SOURCES

1. Evilevitch V., Weber W.A., Tap W.D., *et al.* "Reduction of Glucose Metabolic Activity Is More Accurate than Change in Size at Predicting Histopathologic Response to Neoadjuvant Therapy in High-Grade Soft-Tissue Sarcomas." *Clin Cancer Res* 2008, 14:715-720.
2. http://www.auntminnie.com/index.asp?Sec=sup&Sub=mri&Pag=dis&ItemId=79661&d=1 *(accessed online, 3/14/08).*

NEXT ISSUE: MORE NEWS AND TRENDS IN CLINICAL TRIAL IMAGING

THE WCC NOTE™: Volume 2, Number 7 – March 21, 2008

Contributing Editors: Resham R. Mendi, M.D. (newsletter@wcclinical.com) and Stephen J. Pomeranz, M.D. (newsletter@wcclinical.com)

Managing Editor: Rod Willis (newsletter@wcclinical.com)

Designer: Tom Anneken