QIBA DCE-MRI Technical Committee Update Call

Friday, October 16, 2009
9:30 AM CDT
Call Summary

In attendance:
Gudrun Zahlmann, PhD (Co-Chair)
Sandeep Gupta, PhD (Co-Chair)
Edward Ashton, PhD
Orest Boyko, MD
Geoffrey Clarke, PhD
Jeffrey Evelhoch, PhD
Edward Jackson, PhD
Gregory Karczmar, PhD
Mark Rosen, MD, PhD
Annette Schmid, PhD
John Waterton, PhD
Gerald Wolf, PhD, MD

RSNA
Fiona Miller
Joe Koudelik

General Discussion

DCE-MRI Tech Ctte rotation/changes to Co-Chair Assignments

- Dr Sandeep Gupta (GE) to occupy the imaging manufacturer Co-Chair position
- Dr Zahlmann (Roche) to occupy the pharmaceutical industry Co-Chair position

UChicago Phantom Data Analysis Update

- Obtaining good T1's and orientation measurements remain questionable
- T1 discrepancies not of primary concern because T1 measurements not needed on system calibrations in the future
- Flip angles and coil pulse performance issues may contribute excess noise
- Signal v. R1 to be used to cross-compare scanners using a single 15% flip angle
- Ratio correction of raw data does appear to help analysis results
- Corrected signals show different "swapped" sphere positions; this makes sense if phantom rotation is an issue
- Ratio correction at each rotation position needed to correct signal intensity differences
    - Need to determine why scans at various positions are not reproducible
- Relying on larger corrections may be introducing new sources of error at UChicago
    - Dr Karczmar to look over corrected image data
- Need to determine why UChicago and MDACC both produce one odd orientation and, remedy
- Correlations of signal intensity to R1 with EuroSpin phantom suggested
    - UChicago and MDACC to scan a few internal compartments in attempts to acquire similar data to rule out QIBA phantom issues
- Body coils may also be an issue
    - Examination of a body coil clone proposed to determine dependence on rotation
    - Dr Ashton to generate body coil signal information
- IRAT phantom work focused on T1's and assimilation of uptake curves for various phantom compartments; surface coil examination not done so no comparisons available

UPenn Phantom Data Analysis Update

- UPenn data re-uploaded to FTP site
- Dr Ashton to re-download UPenn data and perform analysis by next week

MD Anderson Cancer Ctr (Dr Jackson)

- MDACC and UChicago data only analyzed to-date
- Dr Jackson to add external marker(s) to phantom to help with image orientation; rotation and inversion issues
    - Phantom #xxxxx to be returned to UChicago for additional acquisitions
- Close data correlations coefficients seen with MDACC analysis (up to 0.99 seen)
- One "rotation B" issue does remain
    - Dr Jackson to revisit this one unique MDACC acquisition outlier
    - Correction does help MDACC data slightly
- QIBA Phantom is complex; a simpler phantom would be less expensive to produce and easier to work with, possibly becoming available to all qualifying sites
    - Begin considering new design for future applications

RSNA 2009 Poster Preparation

- Decision to create two posters for RSNA 2009 finalized
    - Dr Jackson to create poster based on phantom study results to-date
    - Drs Gupta and Barboriak to create poster based on simulation data
- Report of process description and all projects experiences needed
- Need to show experiments are well worth the effort

Agenda for next DCE-MRI TC Call on 10/28 at 11 am CDT

- Once UPenn data is downloaded and analyzed by Dr Ashton, Dr Jackson will incorporate T1 and corrected T1 data into spreadsheet with MDACC and UChicago data for side-by-side comparison; correlation coefficients also needed
- Dr Jackson to revise the DCE-MRI phantom protocol to account for head first/feet first phantom orientation
- Need to pursue a clean Philips system phantom scan next