QIBA Quantitative DCE-MRI Subcommittee

Wednesday, January 20, 2010

11 AM CST

Draft Call Summary

In attendance

Gudrun Zahlmann, PhD (co-chair)
Sandeep N. Gupta, PhD (co-chair)
Edward Jackson, PhD (co-chair)
Edward Ashton, PhD
Andrew J. Buckler, MS
Jeffrey L. Evelhoch, PhD
Michael Knopp, MD, PhD
David E. Purdy, PhD
Mark Rosen, MD, PhD
Annette Schmid, PhD
John Waterton, PhD

RSNA

Fiona Miller
Susan Anderson, MLS
Joe Koudelik

UPenn data analysis update (Drs Jackson and Rosen)

- 1.5T Siemens VB 15 Esprit model data forwarded to Dr Ashton; data was analyzed successfully
- Dr Ashton provided signal intensity and mean T1 values; Dr Jackson has incorporated data into spreadsheets and data plots
- Observations: data is similar after intensity corrections made; tight correlation between UPenn and MDACC data (0.99) re: measurement reproducibility ; corrections show little effect on R1 values though
- There is systemic bias in underestimating R1 in relation to T1

Phantom study update (Dr Jackson)

- Phantom is en route to Dr Charles at Duke
- Acquisition timeline is dependent on availability of scanner at Duke VA Hospital; Dr Charles to inform Dr Jackson of timeline
- Dr Karczmar will send Dr Charles the Philips protocol used at UChicago; Dr Jackson to send the DCE-MRI updated scanning protocol
- Dr Karczmar is pursuing other scans at UChicago and will report on next call
- Phantom will go to UC Davis following Duke; UCDavis will use same protocol as used at MDACC; UCDavis scanners may be one version earlier than MDACC scanners

Phantom design (Dr Jackson)

- Dr Jackson presented CAD of proposed phantom design based on Dr Evelhoch's design with pseudo-rotation
    - Contains 3cm diameter (cross-section) objects; 3 pseudo-rotations (30-60-90 degrees) – 8 compartments each
- Want to include larger delta R1 range to mimic saturation; inner diameter to accommodate higher delta R1s
- Considered layered, two-stack design; prototype design will use simple flat-bottom polypropylene centrifuge tubes
- Important to consider marker to use for asymmetry at this stage
- Discussion on use of copper sulfate or nickel chloride; decision to use nickel chloride
- Dr Jackson to secure cost and time estimates for production of prototype at MDACC

NIBIB update

- No decision or notification yet on funding but signs remain favorable

Clinical test-re-test

- Interest in planning for clinical test/re-test while waiting for funding decision
- Will need to engage support of statistician
- Dr Rosen, Ashton, Jackson and Evelhoch to continue work on draft protocol

Roadmap

- Consensus that it is important to define a roadmap for DCE-MRI to elucidate issues related to phantoms/scanners vs. role as biomarker
- Discuss whether DCE-MRI can be used to identify patients to treat or assess treatment response

Next Steps:

- Dr Jackson will:
    - Send data to reflect IR-based and VFA-based
    - Send data slides to Dr Purdy
    - Provide cost and time estimate for prototype phantom
    - Discuss phantom design with Dr Charles
    - Send DCE-MRI updated scanning protocol to Dr Charles
- Dr Karczmar will:
    - Send Philips protocol used at UChicago to Dr Charles for use at Duke
    - Provide UChicago update on next call
- RSNA staff will distribute draft papers from Mr Buckler to committee members, as designated
- Dr Rosen will send Dr Ashton remaining UPenn data in other formats to overcome reading problems
- Dr Rosen, Ashton, Jackson and Evelhoch to continue work on draft protocol for clinical test/re-test
- Next call scheduled for Wednesday, February 3, 2010 at 11 AM CST