QIBA Ultrasound Shear Wave Speed (SWS): System Dependencies Subcommittee

Friday, September 28, 2012; 11 AM CT

Call Summary

In attendance

Mark Palmeri, MD, PhD (Co-Chair)
Keith Wear, PhD (Co-Chair)
John Benson
Paul L. Carson, PhD
Shigao Chen, PhD
Liexiang Fan, PhD
Brian Garra, MD
Stephen McAleavey, PhD
Andy Milkowski, MS
Kathy Nightingale, PhD
Nicolas Rognin, MSc, PhD
Laurent Sandrin, PhD
Daniel Sullivan, MD
Hua Xie, PhD

RSNA

Joe Koudelik
Madeleine McCoy

Moderator: Mark Palmeri, MD, PhD

Review of call summary from 2012-08-31

- Call summary was approved without modifications

Review of Shear Wave Spectral Content (SSI & Siemens Data)

- Review of SW spectral data that was provided by SSI and Siemens
- Discussion points included:
  - General spectral center frequency increase in stiffer phantoms for the same probe
  - Loss of higher frequency information in stiffer phantoms, but not more compliant phantoms, as a function of increasing lateral position (more shear wave propagation). This was highlighted in one of the figures provided by L. Fan (Siemens)
- Some questions about the SSI methodology:
  - What mode of data acquisition? (a specific quantitative, number generating mode, or an average over an ROI in a quantitative image?)
  - Focal depth same for each transducer?
- We need to solicit more information from other manufacturers.
  - Laurent Sandrin will provide data by next week from the FibroScan system in two different stiffness media.
  - We will reach out to GE for data.
  - Hua indicated that Philips data is on the way.
- Other SWS methodologies will be included:
  - SMURF (McAleavey)
  - SDUV (Chen)
  - Crawling Waves (Parker)
- Summary figures presented today will also be expanded to include MRE data (literature / Chen)
- Imaging vs. measurement mode discussed; Dr. Palmeri to examine possible differences
- Discussion of summary plots of probe central frequency calculation to differentiate probe performance
- Probe focal depth compared cross systems and different phantom sizes; hard numbers in-hand useful for Profile development
- Plotting a function of independent variables to identify trends suggested
- 6-7 additional vendor systems need to be compiled and compared
- Dr. Chen to forward shear wave publication to Dr. Palmeri for reference
- Shear wave imaging of animal system suggested; further discussion needed

***Mendeley* Database / Summary Data Spreadsheet (Dr. Palmeri)**

- Dr. Palmeri's student has compiled a database of over 200 papers
- QIBA literature list was reviewed briefly
- Will solicit missing data from individual authors

- URL to the spreadsheet will be shared with the group to be viewed at their convenience
- Editing permissions will be allowed to those with Gmail addresses (email Mark at mark.palmeri@duke.edu for access)
- The generic 'Results' columns can be used to record other information, such as viscosity
- Dr. Hall had mentioned the availability of an eBook by Sporea ("Hepatic Elastography Using Ultrasound Waves") that will be added to the Mendeley database, and a link will be added to the wiki.
- Dr. Palmeri requested contributors to identify submitted materials that carry restricted sharing status
- Citation key could be used in Mendeley; consensus statement to be drafted

QIBA Tech Ctte Poster Update

- Goal of poster to highlight system variables
- Details from probe central frequency calculations to be included; additional feedback welcome
- Reminder that all poster details/content is needed by Mr. Cohen-Bacrie claude.cohen-bacrie@supersonicimagine.fr
- The RSNA poster summary for this subcommittee was discussed. Submission of material to Claude may be amended to include the shear wave spectral data recently collected and will be collecting in the near future.
- Hard-copy of poster is due RSNA by Nov 1.
- Alternatively, tech committee members may install their posters on Saturday, November 24th.

Next steps:

- Dr. Palmeri's student to continue compilation, tagging, and optimization of references
- Dr. Palmeri to circulate current action items
- Drs. Chen and Palmeri to follow-up offline concerning discussed shear wave publication
- Group system representatives to send center frequency and bandwidths for their systems to Dr. Palmeri, mark.palmeri@duke.edu or Dr. Wear, Keith.Wear@fda.hhs.gov.

Conferences:

- **IEEE Ultrasonics Symposium – Dresden, Germany (October 7-10)**

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