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

Friday, September 20, 2013; 11 AM CT

Draft Call Summary

Additional notes provided by Dr. Wear/ approved by Dr. Palmeri

In attendance

Mark Palmeri, MD, PhD (Co-Chair)
Keith Wear, PhD (Co-Chair)
Paul Carson, PhD
Shigao Chen, PhD
Timothy J. Hall, PhD
Ted Lynch, PhD
Mike Macdonald, PhD
Andy Milkowski, MS
Kathy Nightingale, PhD

RSNA

Joe Koudelik
Julie Lisiecki

Moderator: Mark L. Palmeri, MD, PhD

The call summary from 2013-08-16 was approved

Proposals for ultrasound projects were submitted to the QIBA Steering Committee; however, status of funding remains unknown at this time.

Mark Palmeri described a Duke study to use radiation force to characterize spectral content of shear waves in CIRS Phase 1 phantoms. Average (or center) frequency did not exhibit much variation with lateral position, implying very little viscosity. They fit data to a Voigt model, which allowed estimation of μ_1 and μ_2. They found a very small μ_2 component. Similar findings were found for both phantoms (soft phantom and stiff phantom). Shigao Chen described a similar study conducted at Mayo Clinic. Similar to Duke, they measured center frequency as a function of lateral position. Similar to Duke, they found little variation with lateral position, implying very little viscosity.

Tim Hall described DMA testing. DMA testing implied that the phantoms were lossy. Several different DMA tests were performed, and the results were consistent with each other. The DMA results appear to be inconsistent with the radiation force results. Tim suggested that the underlying physics could be different between the two methods. Kathy Nightingale suggested that it would be nice to convert tan δ values from the DMA testing to μ_1 and μ_2 parameters so the results of the two experiments can be compared. Kathy added that the Voigt model might not be a great model for this data.

Paul Carson suggested that simulations might be useful to try to resolve sources of differences between the mechanical vs. radiation force measurements.

Kathy Nightingale suggested that the spectroscopic method introduced by the French group might be an alternative approach that could help determine whether the ARFI results are method-dependent.

Group asked to keep in mind the target objective from a clinical perspective.

- Cause of depth-dependent frequency variation must be resolved prior to moving onto the next phase of the study.

Action items:

Dr. Hall to follow up offline with Drs. Chen and Lynch regarding lossiness of phantom at low frequencies

Any group members planning to attend *The International Conference on the Ultrasonic Measurement and Imaging of Tissue Elasticity* (ITEC October 1-4, 2013), are asked to email Dr. Palmeri in the interest of meeting up at the conference for discussion: mark.palmeri@duke.edu.

Proposed October Call Schedule:

Date	*Time (CT)*	*Day*	*Committee/ Subcommittee*	*Moderator*
10/11/2013	11:00 am CT	Friday	US SWS Technical Committee	Dr. Garra
10/18/2013	11:00 am CT	Friday	System Dependencies Subcommittee	Dr. Wear
10/21/2013	1:00 pm CT	Monday	Phantom System Testing & Measurement Subcommittee	Dr. Hall

RSNA 2013 Annual Meeting - QIBA Technical Committees Working Meeting:

Wednesday, December 4th| 2:30pm – 5:00pm| Chicago, McCormick Place| Room: TBD

Please let us know whether you plan to attend by responding to the following poll: http://www.doodle.com/fwf76ceggb78r75b.

We appreciate your continued support and look forward to your participation - Thank You!

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