QIBA Ultrasound Shear Wave Speed (SWS)

Clinical Applications and Biological Targets Subcommittee Call

Monday, 22 October 2012; 1 PM CT

Draft Call Summary: **Submitted by David Cosgrove, MD**

In attendance			**RSNA**
Claude Cohen-Bacrie, MS, (Co-Chair)	Gilles Guenette, RDMS, RDCS, RVT	Mark Palmeri, MD, PhD	Joe Koudelik
David Cosgrove, MD, (Co-Chair)	Tim J. Hall, PhD	Daniel C. Sullivan, MD	Julie Lisiecki
Michael Andre, PhD	Christopher Hazard, PhD		

Moderator: David Cosgrove, MD

Discussion

- The call summary of the previous meeting on October 1st was approved.
- David Cosgrove gave an update on the links with LI-RADS pending email discussions with Claude Sirlin. At present, there is little overlap since LI-RADS is initially focusing on focal liver lesions, especially hepatocellular carcinoma. However, when they move into diffuse liver disease, collaboration will become important, and Claude Sirlin would like to remain in contact.
- Tim Hall updated the group on the design of the proposed phantoms which initially would comprise a set of homogeneous non-dispersive phantoms with a Young's modulus ranging from around 10kPa (any softer and they become difficult to handle) up to the values encountered in cirrhosis. Claude Cohen-Bacrie recommended that stiffnesses around the cut-offs for F1 and F2 fibrosis scores would be most clinically relevant since this is where discrimination is most important for patient management and also a challenging region for elastography.
- David Cosgrove gave a summary of the most relevant papers presented at the recent International Conference on Tissue Elasticity Conference (ITEC) in France.
- This led to a presentation on key aspects of a paper presented by Stéphanie Franchi-Abella on behalf of her colleagues in Paris. Claude Cohen-Bacrie gave this presentation in which the CIRS 049 test phantom was scanned using a series of commercial systems, using both strain and shear wave techniques. A feature of the study was that representatives from each manufacturer were present during the measurements to ensure that the technique was optimal. Concentrating on the 3 SWS systems, the deviation from the CIRS specified kPa values was relatively small, the inclusions tending to be underestimated. However, the reproducibility was good, with small standard deviations (<10%). Thus it appeared that all three systems were adequate for clinical use. Claude offered an explanation for some of the deviations, suggesting that they were an effect of the heterogeneity of the phantom which might have allowed internal reflections to be set up; these could affect the accuracy of the SWS estimates.
- The list of potential dependencies has been augmented with suggestions for minimizing their impact in clinical practice. An example is the possible use of the sniff test (whereby the IVC empties during a sniff provided the patients fluid load is normal) as used in echocardiography. Gilles Guenette raised the impact of co-existent steatosis, which seemed to be minimal with current systems.
- Mark Palmeri gave an update on the Mendeley database which is now in an advanced state with a large number of annotated references, thanks to the hard work of Kristina Hallam. The database is now available on request.
- Mark Palmeri raised the question of the frequency response of the different systems, part of the RSNA Poster that has to be completed by Wednesday, the 24th of October. The Fibroscan has a flat response, consistent with its narrow band impulse, while the other commercially available SWS systems have a slope to the plots. The experimental SMURF system has a much steeper slope.

Next Steps:

1. All members to contribute to the list of Dependencies (Confounders), especially to practical recommendations
2. David Cosgrove to send F1-F2 stiffness cut-off to Tim Hall
3. Invite Tom Nelson to join then next telco to update the group on progress with DICOM.

Next QIBA US SWS subcommittee calls:

- **November 5** – Phantom System Testing and Measurement Subcommittee, **1 pm CT, Monday** - (*Dr. Hall to moderate*)
- **November 9** – Clinical Applications and Biological Targets Subcommittee, **11 am CT, Friday** - (*Dr. ---- to moderate*)
- **November 12**–System Dependencies Subcommittee, **1 pm CT, Monday** - (*Dr. Palmeri to moderate*)

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RSNA 2012: The QIBA working meeting is Wednesday, Nov 28th, from 3 pm – 5 pm

- Please respond to the Doodle Poll regarding attendance at Wednesday's QIBA meeting: http://www.doodle.com/kssb47q8up4446c6

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