Canadian Association of Physicists

Association canadienne des physiciens et physiciennes

Contribution ID: **50** Type: **Poster (Non-Student) / Affiche (Non-étudiant(e))**

POS-D26 – Multi-Modality Comparison of Wrist and Ankle joints: A Feasibility Study

Wednesday 9 June 2021 14:03 (2 minutes)

A prototype medical device has been developed and built at Western University to image adolescents with hemophilic arthropathy. The device consists of a plastic cylindrical tub able to rotate freely about a base plate. A 10 MHz linear array ultrasound transducer by Canon Medical Systems is mounted to the inside of the tub pointed toward its center. The tub is filled with water to act as a medium between the ultrasound transducer and the skin. The leg or arm is fixed, while a clinical ultrasound probe rotates over 360 degrees. 2D US images are recorded every 0.5 degrees, and reconstructed into a 3D volume in an inverse fan geometry. The 3D image provides a viewpoint that is unreachable in conventional 2D ultrasonography. The prototype design, study protocol workflow, and preliminary results will be presented; specifically showing corresponding anatomical landmarks between 3D ultrasound and MR images. The future work for the study is a clinical trial at SickKids Hospital in Toronto; whereby, ultrasound / MRI data from each subject will be viewed by two experienced musculoskeletal radiologists who are blinded to the other aspects of the study. Interpretations from both modalities will gauge the feasibility of this approach for use in imaging of hemophilic arthropathy in target joints.

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Session Classification: W-POS-D #17-27,110 Poster session (DPMB) / Session d'affiches (DPMB)

Track Classification: Physics in Medicine and Biology / Physique en médecine et en biologie (DPMB-DPMB)