Teaching the FAST algorithm with the Reacts platform – a pilot study
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Background

- Telemedicine allows remote experienced physicians to teach ultrasound skills to ultrasound naïve clinicians (Brisson et al., 2015)
- Augmented reality (AR) allows remote experienced physicians to interact with learners in real time using 2D and 3D virtual objects and image overlay
- The Reacts (Remote Education, Augmented Communication, Training and Supervision) platform incorporates traditional telecommunication with augmented reality, thus allowing live virtual assistance for medical education purposes

Aims

1. Determine if Reacts can be used to teach the focused assessment with sonography for trauma (FAST) algorithm, a well-established bedside ultrasound skill
2. Determine if Reacts teaching is as effective as in-person teaching for imaging three components of the FAST algorithm:
   - the hepatorenal recess (Morison's pouch, MP)
   - the splenorenal space (SS)
   - the suprapubic window (pouch of Douglas, PD)
3. Determine if Reacts teaching is as effective as in-person teaching in terms of practical and theoretical ultrasound skills necessary to image the MP, SS, and PD

Methods

Ultrasound naïve medical students (n=8) received study material and a teaching session on how to image the MP, SS, and PD. One group of students was taught remotely (Reacts; n=3) and the other group was taught in-person (In-person; n=3).

Results

1. Reacts teaching was equivalent to in-person teaching for the acquisition of practical ultrasound skills.

![Figure 1](image1.png)

Reacts display

![Figure 2](image2.png)

The students could simultaneously see the instructor located in a separate room (A), their ultrasonographic images (B), and an image overlay showing the instructor virtually moving his probe on the patient (C), hence permitting direct virtual assistance.

Effectiveness of Reacts versus in-person teaching techniques was assessed by completion of a practical and theoretical test before the teaching session (pre-test) and identical tests immediately after the teaching session (post-test). The practical post-test was graded by an instructor blinded to the instruction method.

Conclusions

1. Reacts teaching was equivalent to in-person teaching for the acquisition of practical ultrasound skills.
2. Reacts can be used to remotely teach ultrasound-naïve students the bedside ultrasound skills necessary to identify discrete components of the FAST exam.

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