

Conference Abstracts

Comparison of POCUS and Cart Ultrasound Devices for the Breast and Axilla

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Background

Globally breast cancer causes a death every minute and many deaths are avoidable if underserved women had access to early detection. We estimate that 1,000 of the 1,800 women's lives could be saved each day if this inequity was resolved. (1-9) We have a transformative point of care (POC) breast cancer model that detects, diagnoses and treats breast cancer in a single visit at low cost and at the heart of this is model point of care ultrasound (POCUS). Our hypothesis is that POCUS devices are non-inferior to cart ultrasound (US) for effective use in whole breast US and axillary assessment and biopsy guidance.

Methods

Following informed consent 8 women aged 18 to 65 were scanned with a Toshiba cart US (Aplio 300) and with the GE Vscan AirTMCl, Lumify L12-4, Butterfly iQ3 and Clarius I15 HD3. We scanned the breast and the ipsilateral axilla. Each device was rated by breast US experts 3 radiologists and 1 breast surgeon, for near field resolution, depth assessment, internal lesion resolution, margin assessment, blood flow, shadowing and interface artifacts, dermal line clarity, axilla resolution and ease of use. Each category was rated from 1 to 5 by consensus.

Results

Ratings of each of the image quality categories were recorded and totaled. The Clarius device

was inoperable. The remaining POCUS devices were equivalent or outperformed the Toshiba cart (Aplio 300) for breast and axillary assessment and for biopsy guidance acceptance.

Conclusion

Vscan, Butterfly, Lumify were adequate by 4 breast US providers to assess lesions and acceptance to guide biopsies of the breast and the axilla. These POCUS devices are low cost, battery operated, portable and effective for POC breast US and can be paired with existing AI tools. This is a potential solution for inequities in breast cancer early detection globally at POC.

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