IMPROVED INTER-OBSERVER VARIABILITY, ACCURACY AND PRECISION OF ECHOCARDIOGRAPHIC VISUAL LVEF ASSESSMENT THROUGH A SELF-DIRECTED LEARNING PROGRAM USING CMR IMAGES

Poster Contributions
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Background: Inter-observer variability (IOV) for visual EF estimation by echo may be up to 14%, but group retraining in EF reading is difficult. We sought whether self-directed education could improve the accuracy and IOV of visual EF and whether a multi-reader estimate improves precision.

Methods: 31 participants provided a single point EF for 30 echos with a spectrum of EF, image quality, and clinical context, in pts undergoing MRI within 48 h. Case-by-case variance from MRI EF was provided to all participants, and echos with greatest reader variability were reviewed with corresponding MRI images. Self-directed learning was undertaken by side by side review of echo and MRI images (with EF). Two months later, 20 new cases were shown to the same participants using the same method.

Results: The intervention improved the correlation and level of agreement between MRI and visual EF (Figure). The baseline IOV of ±0.12 improved to ±0.097 post intervention (p=0.03). EF misclassification (defined as ±0.05 of MRI-EF) was reduced from 56% to 47%(p<0.001), with a decrease in the absolute difference between MRI and echo for all cases and all readers (0.07±0.01 to 0.06±0.01, p=0.0001). The improvement was largest for readers with lower baseline accuracy. A combined (physician-sonographer) EF estimate improved EF precision by 25% compared to individual reads.

Conclusion: In readers with varying levels of experience, a simple, mostly self-directed intervention decreased the IOV and improved accuracy of visual EF estimate.