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Non Invasive Imaging

IMPROVEMENT IN STRAIN CONCORDANCE BETWEEN THE VENDORS AFTER STRAIN STANDARDIZATION INITIATIVE

Poster Contributions

Hall C

Sunday, March 30, 2014, 9:45 a.m.-10:30 a.m.

Session Title: Non Invasive Imaging: Left Ventricular Myocardial Strain Imaging-Clinical Applications

Abstract Category: 15. Non Invasive Imaging: Echo

Presentation Number: 1174-32

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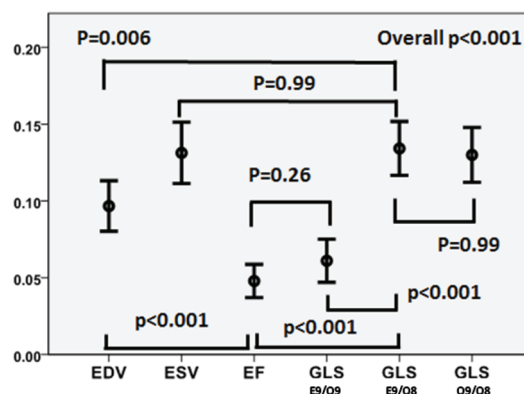
Background: Significant disagreement among measurements from different vendors has provided an obstacle to the clinical use of strain. It is unknown whether the work of a joint standardization (ST) task force between industry and American and European Societies has improved this heterogeneity. We tested the hypothesis that between- vendor variability of global longitudinal strain (GLS) has improved to the extent that it is similar to variations of LV volumes and LVEF.

Methods: 76 pts (52±20yrs, 54% men) prospectively underwent two sequential exams using two ultrasound systems (iE33 vs. Vivid E9). GLS was calculated using proprietary software (EchoPAC PC12 and QLAB8 [pre-ST] & QLAB9 [post-ST]). LV volumes were measured using biplane Simpson's method. Mean, standard deviation (SD), coefficient of variation (CV), bias, limits of agreement (LOA) and %error (=LOA/mean) of each variable were analyzed. CVs were compared using mixed models with Bonferroni correction.

Results: Bias between vendors and %error has improved with new software (E9 vs Q9) and is analogous to EF (Table). The CV of GLS (Q8 vs Q9 and Q8 vs E9) was similar to ESV pre-ST (p=0.99) but significantly larger than LVEF and Q9 vs E9 (Figure). There was no difference in CV between Q9 vs E9 and LVEF (p=0.99).

Conclusion: Improvement in between-vendor concordance in GLS after ST has made the variability of this test analogous with that of EF. Robust, quantitative information is obtainable with GLS.

Coefficient of Variance



	EDV	ESV	EF	GLS (ES/Q9)	GLS (ES/Q8)	GLS (Q9/Q8)
LOA	27.8 ml	15.2 ml	9.7 %	4.0 %	4.9 %	5.3 %
Bias	-4.6 ml	-1.4 ml	-0.2%	-0.2%	-2.7%	-2.5%
% error	0.31	0.40	0.16	0.22	0.27	0.29
r	0.86	0.94	0.88	0.88	0.78	0.71