

EP09.57 Feasibility of assessing heart chamber area change during the cardiac cycle using speckle tracking echocardiography

Jakub Mlodawski^{1,2}, Anna Zmelonek-Znamiorska^{1,2}, Marta Mlodawska^{1,2}, Lukasz Pawlik³, Grzegorz Swiercz^{1,2}

- 1. Jan Kochanowski University in Kielce, Poland.
- 2. Provincial Combined Hospital in Kielce, Kielce, Poland.
- 3. Kielce University of Technology, Poland

Objectives: The study aimed to assess the repeatability of fractional area change (FAC) and 24-segment transverse fractional shortening (FS) for two selected segments—basal (segment 1) and apical (segment 24) of the left and right ventricles (LV, RV) —by comparing evaluations between two sonographers as well as by the same sonographer using speckle tracking echocardiography (STE) with *FetalHQ* on the same four-chamber cine-loop.

Methods: The study included 38 women for the evaluation of intra-observer variability. In this arm, the same sonographer performed a 2D STE examination on the same 7-second four-chamber cine-loop (4CV) using *FetalHQ* software, with the assessments repeated a few days apart. To assess inter observer variability, two sonographers independently analyzed the same data. We conducted analyses of two compound parameters reflecting chamber area: FAC and 24-segment fractional shortening (FS) for segments 1 and 24. Interclass correlation coefficients (ICC) were calculated with a 95% confidence interval (95% CI) for these results.

Results: The findings are presented in Table 1. Most parameters showed poor reproducibility between sonographers as well as in repeated assessments by the same sonographer. The sole exception was segment 24 FS for the right ventricle; however, statistical fluctuation cannot be excluded due to the small sample size.

Conclusions: Parameters evaluating fetal heart chamber area changes during the cardiac cycle, assessed using 2D STE, exhibit poor reproducibility.

TABLE:
Repeatability analysis results.

Parameter	Interobserver variability (ICC)	95% CI	Intraobserver variability	95% CI
LV FAC	0,09	0,02 - 0,35	0,51	0,23 - 0,71
RV FAC	0,18	0,04 - 0,54	0,23	0,01 - 0,52
LV 24-segments FS (1)	0,49	0,06 - 0,76	0,26	0,07 - 0,52
RV 24-segments FS (1)	0,07	0,02 - 0,44	0,18	0,12 - 0,47
LV 24-segments FS (24)	0,39	0,06 - 0,71	0,29	0,03 - 0,56
RV 24-segments FS (24)	0,85	0,66 - 0,94	0,37	0,06 - 0,62