

TECHNOLOGIST PRESENTATION

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Inter- and intra-study reproducibility of LV volume analysis performed by technologists

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Background

Cardiac magnetic resonance (CMR) imaging studies are increasingly being carried out in patients with cardiovascular disease. In a high throughput centre (>1,200 scans per year) technologists can potentially provide significant help in assisting with LV volumes analysis but the inter- and intra-observer variability of this task has not been reported.

Methods

Two CMR technologists with no previous experience in analysing LV volumes assessed 20 CMR studies in ischemic heart disease patients. 10 studies were re-analysed 24 hours after the first analysis.

Volumes and mass were analysed using semi-automated software (Argus, Siemens) following a 2hr tutorial on how to use the software.

Results

Intra-observer variability was assessed using intraclass correlation coefficient (ICC); inter-observer variability was assessed using Bland Altman plots for agreement. Intra-observer variability was low for both observers (ICC; observer 1 EDV: 0.99, ESV: 0.93, mass: 0.94 vs observer 2 EDV: 0.97, ESV: 0.97, mass: 0.94). Inter-observer variability was lowest for volumes and highest for mass (Table 1).

Conclusions

Technologists with no previous experience in analysing LV parameters can analyse LV volumes after a short tutorial on a semi-automated software with good reproducibility, and a low inter- observer variability.

Table 1 Inter-observer variability

Observer		EDV (ml)	ESV* (ml)	mass (g)
1 vs 2	Mean (SD) difference	2.4 (6.1)	0.3 (0.2)	5.1 (11.3)
1 vs 2	Mean (SD)	163.4 (30.3)	4.4 (0.4)	147.8 (27.0)
1 vs 2	Coefficient of variation (%)	3.7	4.4	7.6

Summary statistics calculated are mean and SD of differences, mean and SD of values. Differences between observers are assessed using Bland-Altman plots. *log-transformed for skewed distribution.

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