

11th World Congress on Pediatric Cardiology and Congenital Cardiovascular Disease

April 18-19, 2017 London, UK

Influence of the frame rate (DICOM vs. Acoustic Frame Rate) on strain analysis assessed by two-dimensional (2D) speckle tracking in fetal echocardiography

Christian Enzensberger

Justus-Liebig University of Giessen, Germany

Introduction & Purpose: Frame rates (FR) used for strain analysis assessed by speckle tracking in fetal echocardiography show a huge variation. Due to higher heart rates compared to adults, much higher FR is requested in fetuses. The aim of this study was to investigate the influence of the FR on strain analysis in two-dimensional (2D) speckle tracking.

Material & Methods: A prospective cross-sectional study was performed. Based on an apical or basal four-chamber view of the fetal heart, cine loops were acquired on a Toshiba Aplio 500 system. Each loop was digitally stored twice: firstly as a DICOM (digital imaging and communications in medicine) file with a FR of 30 frames per second (fps), secondly with the original FR (acoustic FR=AFR). For each loop, fetal global longitudinal peak strain values of both, left (LV) and right ventricle (RV), were assessed by 2D wall motion tracking. Strain analysis was performed offline by two investigators. Interobserver variability was analyzed.

Results: A total of n=11 healthy fetuses with an echocardiogram performed between 19 and 34 weeks of gestation were included. The AFR was 126 ± 16 fps. Relating to global longitudinal peak strain values of both ventricles, there was no significant difference between DICOM FR and AFR (LV: -18.22% (DICOM FR) vs. -17.77% (AFR), RV: -16.30% (DICOM FR) vs. -15.28% (AFR); $p > 0.05$). The interobserver variability showed a strong agreement with an intraclass correlation coefficient (ICC) of > 0.8 .

Conclusions: The influence of the FR on global longitudinal peak strain values in 2D speckle tracking seems to be less important than expected. For strain analysis in fetal echocardiography FR of > 100 fps seem to be non-essential.

Biography

Christian Enzensberger works as a Consultant Obstetrician in the Division of Prenatal Medicine at University Hospital Giessen, Germany. His research interests include the assessment of cardiac function by speckle tracking and tissue doppler in fetal echocardiography.

cenzensberger@googlemail.com

Notes: