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Variability and reproducibility of right ventricular longitudinal strain in patients with repaired Tetralogy of Fallot

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Introduction (or Basis or Objectives): Right ventricular longitudinal strain (RVLS) has emerged as an approach for quantifying right ventricular function in diseases such as pulmonary hypertension and congenital heart disease. Data about the reproducibility of RVLS measurements, however, are missing. The aim of the current sudy were to analyze the reproducibility of RVLS on speckle-tracking echocardiography in the assessment of right ventricular function in patients with repaired Tetralogy of Fallot.

Methods: In this retrospective, single-center study, intra- and intra-observer intraclass correlation coefficients (ICC) were calculated. For this, 10 studies were randomly selected. These studies were analyzed by two independent observers and repeated by the same observer six months after the first analysis. Global longitudinal strain (GLS) and free wall strain (FWS) was evaluated in the four-chamber view using the standard semiautomatic method (Qlab software; Philips)

Results: An excellent inter-observer ICC was obtained, of 0.89 for GLS and 0.88 for FWS. In the same way, the intra-observer ICC was very good with an ICC of 0.96 for GLS and 0.95 for FWS. The mean ± SD inter-observer differences for the RV GLS was 2.5±1.8%.

Conclusions: Our study shows that the intra- and inter-observer agreement for the RVLS are very good with differences < 3%. Therefore, longitudinal strain is a highly reproducible tool to assess right ventricular function in patients with repaired Tetralogy of Fallot.