Introduction

The systolic (S) to diastolic (D) duration ratio (S/D) has been proposed as a useful index to assess ventricular function in some pediatric cardiopathies. Prenatal reports on S/D are scarce and nomograms are not available. We aimed to establish normal values for left (LV) and right ventricular (RV) S/D ratios in normal fetuses and to investigate its relation to heart rate (HR), gestational age (GA) and estimated fetal weight (EFW).

Methods

Prospective cohort study including 602 low-risk singleton pregnancies (GA 18-41 weeks). Spectral Doppler signals of LV and RV inflow were obtained. D was defined from E-wave onset to A-wave termination and S from A-wave end to the onset of the next E-wave. Relations between S/D ratios and HR, GA and EFW were analysed by univariate and multivariate regression. Interclass correlation coefficient (ICC) was used to assess intra and inter-observer reproducibility in 45 fetuses.

Results

S/D ratios were successfully obtained in 95% of fetuses with good reproducibility (ICC>0.85). HR range was 114-171 bpm. LV and RV S/D ratios were significantly correlated to HR but not GA or EFW. With increasing HR, the S/D ratio increased exponentially in the LV and quadratically in the RV.

Conclusions

S/D is a feasible and reproducible parameter to evaluate biventricular function in fetal life. We provide fetal reference ranges of LV and RV S/D ratios for HR. Future studies will assess its clinical utility in fetal cardiac pathologies.