Introduction
Sphericity index (SI) has been examined in adult and pediatric patients and found to be a useful tool to detect abnormal cardiac function resulting from remodeling of the ventricular chamber. Fetal SI has already been reported. However, there is no report on fetal SI before 20th gestational weeks.

Objective
The purpose of this study is to clarify SI of 24 transverse segments distributed from the base to the apex of each of the ventricular chambers of normal fetuses before 20th gestational weeks.

Methods
Forty-eight normal fetuses were examined between 12 and 19 gestational weeks. The displacement of the ventricular endocardium during the cardiac cycle was computed using offline speckle-tracking software (GE healthcare). We analyzed the length of 24 end-diastolic lateral segments and end-diastolic middle-basal-apical distribution from the base to the apex of each ventricle according to the method of DeVore et al.(1). The SI was computed for each of the 24 segments by dividing the mid-basal–apical length by the transverse length for each segment.

The measurement was performed by three examiners and the measurement values of three examiners were averaged.

Results (Figure)
The SI for each segment was independent of gestational age. The SI of the right ventricle was significantly (P<0.001) lower than that of the left ventricle for segments 1–10, suggesting that the right ventricle was more globular in shape than was the left ventricle at the basal segment only. SI before 20th gestational weeks were different from the results of SI reported over 20th gestational weeks.

Conclusion
It has been suggested that ventricular morphology before 20th gestational weeks differs from that of over 20th gestational weeks. This may be related to myocardial densification or myocardial performance.

Reference:
(1) DeVore GR et al. 24-segment sphericity index: a new technique to evaluate fetal cardiac diastolic shape. UOG 2018.