Zone-specific reference ranges of fetal adrenal artery Doppler indices: a longitudinal study

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Abstract

Objective: To establish reference ranges of adrenal artery Doppler indices for the the inferior adrenal artery (IAA) and middle adrenal artery (MAA). Design: longitudinal observational study Setting:China Population or sample: 168 low-risk singleton pregnant women and their fetuses (85 male and 83 female) with 843 observations Methods: The pulsatility index (PI), resistance index (RI), and systolic:diastolic ratio (S/D) of the IAA and MAA were obtained serially at 4-week intervals. Gestational age-associated reference ranges were established by multilevel modeling. Differences in Doppler indices between the IAA and MAA were assessed. Main outcome measures: fetal adrenal artery Doppler Results: Longitudinally established percentiles of Doppler indices show that the IAA had a reduction around 35 weeks of gestation and that the MAA remained unchanged throughout the second half of pregnancy. The IAA had a higher detection rate than the MAA (100% vs 89.2%, $p<0.05$). Lower PI, RI and S/D were observed in the MAA than in the IAA ($p<0.05$) from 752 paired measurements. Conclusion: Reference ranges for adrenal artery Doppler indices that are based on longitudinal observations appear to be more appropriate for serial evaluation of fetal hemodynamics. There is a zonal difference in blood supply in favor of the fetal zone, which may correspond to its unique function, i.e., androgen secretion to help produce estrogens and maintain pregnancy. Funding: This study was supported by the State Natural Sciences Foundation of China (nos. 81871372,81501497). Keywords:fetal; adrenal; doppler; pulsatility index

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