

Differences in Size of Right and Left Fetal Choroid Plexuses at 11-13 Weeks: An Early Sign of 'Developmental' Laterality?

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Objective: To establish reference values for the right and left fetal choroid plexus' (CP) length, area and circumference at 11-13 weeks, with respect to the fetal biparietal diameter (BPD), and to compare the right to the left side.

Methods: Prospective study on 114 fetuses at 11-13 weeks undergoing first trimester screening for aneuploidy and structural fetal abnormalities. After the establishment of the fetal situs, the plane of the “butterfly” was obtained on all fetuses from which the length, area and circumference of both the right and left CP were obtained and the right and left sides compared. Utilizing paired T-test, ANOVA test, scatter plots and linear and logarithmic fittings, reference ranges and charts for the CP's length, area and circumference were then formulated according to their relationship to the fetal BPD. $P < 0.05$ was considered statistically significant.

Results: Reference values for fetal CP's length, area and circumference, with respect to the fetal BPD, are established. There is a statistically significant difference between the right and left sides in all parameters, with all measurements statistically greater on the fetal left side with $p < 0.0001$.

Conclusion: To our knowledge, this is the first study that has aimed at establishing and comparing the reference values for right and left fetal CP's length, area and circumference in the first trimester fetus at 11-13 weeks. And given the critical developmental role of the fetal CP, through its secretion of neuropeptides, growth factors, chemorepellents and cytokines that serve to protect and repair, the evidence provided by our study in support of the left CP being statistically larger than the right, leads us to ponder whether our findings could truly represent an early sign of 'developmental' laterality.