

EP 12.25

Fetal cortical brain development in monochorionic diamniotic twin pregnancies.

Giulia Scamardella, Enrica Di Lella, Beatrice Giordano, Giuseppe Maria Maruotti, Maurizio Guida, Laura Sarno

University Federico II, Naples, Italy

Introduction

Monochorionic diamniotic twin pregnancies (MCDA) experience neurodevelopmental impairment more often than singletons, probably due to the unique hemodynamic challenge of a shared circulation.

Objective

To compare fetal cortical maturation in MCDA and singleton pregnancies.

Methods

Single-center prospective observational study. Neurosonography between 28 and 32 weeks' gestation.

20 uncomplicated MCDA vs 56 singletons.

Results

We reported region-specific cortical differences in MCDA fetuses compared with singletons, including greater cingulate sulcus depth (1.9 ± 0.3 vs 1.5 ± 0.4 mm; $p < 0.001$), alongside reduced corpus callosum thickness (1.0 ± 0.3 vs 1.2 ± 0.3 mm; $p = 0.007$) insular depth (6.5 ± 1.4 vs 7.8 ± 0.6 mm; $p < 0.001$) and sylvian fissure (5.3 ± 0.6 vs 6.0 ± 1.6 mm; $p = 0.034$).

Conclusion

Fetal cortical development in MCDA twins appears to follow a region-specific pattern, with **increased growth of the cingulate sulcus** and **delayed maturation of the insula and sylvian fissure**. These relationships suggest that maternal hemodynamic health may selectively affect fetal cortical growth, supporting a model of **prenatal brain adaptation** in MCDA pregnancies. Further research is necessary to confirm these findings.



Figure 1. Measurements of corpus callosum length and thickness

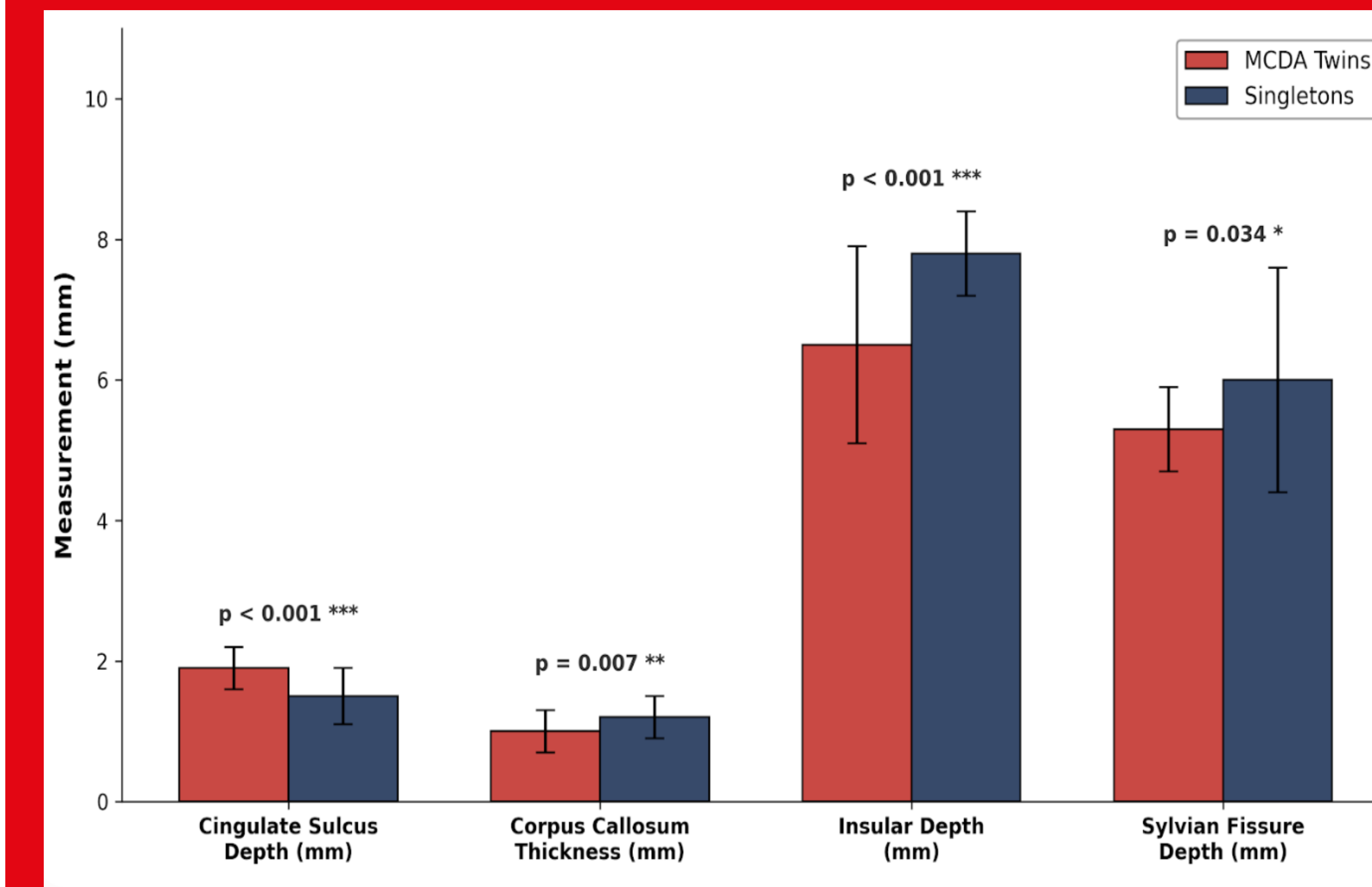


Figure 2. Differences in normalized measurements between MCDA and singletons