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Fetal Exposure to MR Imaging: Long-Term Neurodevelopmental Outcome

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Objective

Very few studies have investigated long-term neurodevelopment of children exposed to MR imaging antenatally. Thus, the purpose of our study was to evaluate long-term neurodevelopmental outcomes of children exposed to MR imaging during pregnancy.

Methods

We conducted a historical prospective cohort study in a single tertiary medical center. Women exposed to 1.5T noncontrast MR imaging for maternal or fetal indications were matched to unexposed controls. Long-term neurodevelopmental outcomes were evaluated of their children, 2.5 to 6 years of age, according to the Vineland-II Adaptive Behavior Scale. The Vineland-II Adaptive Behavior Scale assesses communication, daily living skills, socialization, and motor skills. A composite score summarizes these 4 domains.

Results

A total of 131 exposed women matched our inclusion criteria and were included in the study group, and 771 unexposed women, in the control group. No difference was identified in the Vineland-II Adaptive Behavior Scale composite score between the children of the study and control groups (mean, 110.79 versus 108.18; P =.098). Differences were also not observed between the children of the 2 groups in 3 of the 4 questionnaire domains: communication (108.84 versus 109.10; P =.888), daily living skills (109.51 versus 108.28; P =.437), and motor skills (105.09 versus 104.42; P =.642). However, the socialization score was favorable for the study group (112.98 versus 106.47; P <.001).

Conclusion

Exposure to 1.5T noncontrast MR imaging during pregnancy had no harmful effects on long-term neurodevelopmental outcomes. This study contributes to understanding the safety of MR imaging during pregnancy.