Structural Brain Network Reorganization and Social Cognition Related to Adverse Perinatal Condition from Infancy to Early Adolescence

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Abstract

Adverse conditions during fetal life have been associated to both structural and functional changes in neurodevelopment from the neonatal period to adolescence. In this study, connectomics was used to assess the evolution of brain networks from infancy to early adolescence. Brain network reorganization over time in subjects who had suffered adverse perinatal conditions is characterized and related to neurodevelopment and cognition. Three cohorts of prematurely born infants and children (between 28 and 35 weeks of gestational age), including individuals with a birth weight appropriated for gestational age and with intrauterine growth restriction (IUGR), were evaluated at 1, 6, and 10 years of age, respectively. A common developmental trajectory of brain networks was identified in both control and IUGR groups: network efficiencies of the fractional anisotropy (FA)-weighted and normalized connectomes increase with age, which can be related to maturation and myelination of fiber connections while the number of connections decreases, which can be associated to an axonal pruning process and reorganization. Comparing subjects [...]
Corrigendum: Structural Brain Network Reorganization and Social Cognition Related to Adverse Perinatal Condition from Infancy to Early Adolescence

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Keywords: connectome, intrauterine growth retardation, birth weight, executive function, neurodevelopment, preterm infants

A corrigendum on

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In the original article, we omitted a reference to Réveillon et al. (2016) regarding the description of the neuropsychological tests performed by the children and the association between IUGR and hyperactivity/inattention symptoms. This reference is cited in the description of the third cohort (Section Materials and Methods. Subjects) and in the Correlation between Network Metrics and Neuropsychological Score section, as appeared below. We also had neglected to thank the invaluable contribution of the team involved in recruitment, imaging acquisition, and neuropsychological testing. The revised version of the acknowledgments is provided below. The authors apologize for the oversight. These errors do not change the scientific conclusions of the article in any way.

MATERIALS AND METHODS

Subjects
- Third cohort (C10) was composed of 16 subjects, recruited at the Hôpitaux Universitaires de Genève (HUG). Both MR imaging and neurobehavioral assessment was performed at 10 years of age (Réveillon et al., 2016).
DISCUSSION

Correlation between Network Metrics and Neuropsychological Scores

These findings are consistent with previous studies showing higher hyperactivity and conduct problems associated with IUGR at school age (Wiles et al., 2006; Réveillon et al., 2016).

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REFERENCES


Conflict of Interest Statement: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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