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INCREASED PARAHIPPOCAMPAL AND LINGUAL GYRIFICATION IN FIRST-EPIISODE SCHIZOPHRENIA

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Introduction: Surface based MRI methods are a promising approach for the identification of cerebral shape alterations in schizophrenia [1]. In particular, investigating gyrification might offer important evidence for disturbed neurodevelopmental mechanisms in schizophrenia.

Objective: The present study is the first to compare on a vertex - wise basis mean curvature as a sensitive parameter for the identification of local gyrification changes in first episode schizophrenia.

Methods: 54 patients with first-episode schizophrenia and 54 healthy control subjects underwent high-resolution T1-weighted MRI scans. Surface extraction and mean curvature calculation was performed using the Freesurfer Software package. Statistical cortical maps were created to estimate gyrification differences between groups.

Results: A significantly increased gyrification was detected in patients relative to controls in a large right parahippocampal-lingual cortex area. A further analysis of cortical thickness of this cluster revealed concurrent significant reduced cortical thickness in patients.

Conclusions: This is the first study to reveal an aberrant gyrification of the medial surface in first episode schizophrenia on basis of a vertex - wise analysis of local gyrification changes of the entire cortex. Both affected areas, the parahippocampal and the lingual cortex, are of high pathophysiological relevance for schizophrenia. Thus, our data provided new in vivo evidence for an early maturational deficit of these cortical areas in schizophrenia [2].

References:

1. Schultz, C.C., et al., Reduced cortical thickness in first episode schizophrenia. *Schizophr Res*, 2010. 116(2-3): p. 204-9.
2. Schultz, C.C., et al., Increased parahippocampal and lingual gyrification in first-episode schizophrenia. *Schizophr Res*, in press.