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SOURCE-BASED MORPHOMETRY OF GRAY MATTER VOLUME IN PATIENTS WITH SCHIZOPHRENIA WHO HAVE PERSISTENT AUDITORY VERBAL HALLUCINATIONS

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Abnormal brain structure of frontal and temporal brain regions has been suggested to occur in patients with schizophrenia who have frequent auditory verbal hallucinations (AVH). However, it is unknown whether this is specific to this patient subgroup. In this study tested the hypothesis that frontotemporal gray matter volume changes would characterize patients with persistent AVH (pAVH) in contrast to healthy controls and patients without AVH. Using structural magnetic resonance imaging at 3T, we studied 20 patients with schizophrenia and 14 matched healthy controls. Ten patients were classified as having chronic and treatment resistant AVH, whereas the remaining 10 patients either never had AVH in the past or were in full remission with regard to AVH (nAVH). Using a multivariate statistical technique for structural data, i.e. 'source-based morphometry' (SBM), we investigated naturally grouping patterns of gray matter volume variation among individuals, the magnitude of their expression between-groups and the relationship between gray matter volume and AVH-specific measures. SBM identified a lower expression of medial and inferior frontal as well as bilateral temporal gray matter volume between pAVH and nAVH. This pattern did not differ between nAVH patients and controls and was associated with 'physical' AVH characteristics (such as symptom duration, location, frequency and intensity) in the pAVH patient group. These results suggest that a pattern of lower gray matter volume in medial frontal and bilateral temporal cortical regions differentiates between patients with persistent AVH and non-hallucinating patients. Moreover, the data support a specific role of this neural pattern in AVH symptom expression.

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