experiences. Reasoning biases may particularly contribute to the development of clinical phenomena.

Monday, April 4, 2005

S-22. Symposium: Brain morphology in schizophrenia: New findings and perspectives

Chairperson(s): Ralf Schloesser (Jena, Germany), Tim Crow (Oxford, United Kingdom)
08.30 - 10.00, Gasteig - Carl-Orff Hall

S-22-01

Schizophrenia as a misconnexion syndrome

T. Crow. *POWIC - Dept. of Psychiatry University of Oxford, Oxford, United Kingdom*

S-22-02

Focal white matter density changes in schizophrenia

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Objective: Gray matter changes have been demonstrated in several regions in schizophrenia. Particularly, the frontal and temporal cortices and amygdala-hippocampal region have been found decreased in volume and density in magnetic resonance imaging (MRI) studies. These abnormalities may reflect an aberrant neuronal network in schizophrenia, suggesting that white matter fibers connecting these regions may also be affected. However, it is unclear if particular white matter areas are (progressively) affected in schizophrenia and if these are related to the gray matter changes.

Methods: Focal white matter changes in schizophrenia were studied in whole brain magnetic resonance images acquired from 159 patients with schizophrenia or schizophreniform disorder and 158 healthy comparison subjects using voxel-based morphometry. White matter density changes in the patients with schizophrenia were correlated to gray matter density changes and to illness severity.

Results: In the patients with schizophrenia, significant decreases in white matter density were found in the genu and truncus of the corpus callosum in the left and right hemisphere, in the right anterior internal capsule and in the right anterior commissure. No interactions between diagnosis and age were found. Increased illness severity was correlated with low density of the corpus callosum and anterior commissure. Decreased corpus callosum density correlated with decreased density of thalamus, lateral inferior frontal and insular gray matter in patients and controls and with decreased density of medial orbitofrontal and superior temporal gyri in patients. Decreased internal capsule and anterior commissure density correlated with increased caudate, and globus pallidus density in patients and controls.

Conclusion: These findings suggest aberrant inter-hemispheric connectivity of anterior cortical and sub-cortical brain regions in schizophrenia, reflecting decreased hemispheric specialisation in schizophrenia.

S-22-03

Magnetisation Transfer Ratio (MTR) abnormalities in schizophrenia

M. Bagary, J. Foong, M. Symms, G. Barker, E. Joyce, M. Ron. *Institute of Neurology Dept. of Neuropsychiatry, London, United Kingdom*

Objective: Magnetisation Transfer Ratio (MTR) may be more sensitive than conventional volumetric imaging to structural brain abnormalities in both chronic and first-episode schizophrenia populations. We predicted that MTR abnormalities would be more widespread in chronic schizophrenia.

Methods: We acquired magnetisation transfer images from 29 first-episode schizophrenia patients; 30 matched control subjects; 25 chronic schizophrenia patients and 25 matched control subjects using a 1.5T scanner. Images were processed using voxel-based morphometry (VBM) which allows automated whole brain structural analysis, therefore limiting observer bias and providing significant advantages over conventional labour intensive region of interest studies. SPM99 (Wellcome Department of Cognitive Neurology, London) was used for image processing and statistical analysis. Group comparisons of regional differences in MTR were made.

Results: Group comparisons revealed more widespread MTR abnormalities in chronic schizophrenia, particularly in the left prefrontal cortex and parieto-occipital cortex bilaterally.

Conclusion: Based on this cross-sectional analysis of first-episode and chronic schizophrenia populations, MTR abnormalities are more diffuse in chronic schizophrenia. This may reflect study population heterogeneity; medication effects or alternatively that MTR abnormalities may be progressive, at least in some patients. Longitudinal studies are required to confirm these findings.

S-22-04

Novel morphomtric approaches in schizophrenia: Methods and applications

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In recent years, numerous automated methods to assess brain structure without labour-intense and error-prone manual tracings have been developed. Most of these methods take advantage of image registration algorithms and allow voxel-wise analysis without the need of a priori definition of regions of interests. The most widely used method is voxel-based morphometry (VBM) which relies on segmentation of the brain into different tissue types. Deformation-based morphometry (DBM) on the other hand, uses high-dimensional image registration analyzing deformations needed to warp one brain onto another. Finally, surface-based approaches to determine a 2D gyrification index will be outlined. We will provide a methodological overview about strengths and limitations of these methods and their use in schizophrenia research. The focus of these applications will be: a) cross-sectional analysis in schizophrenia samples analyzing groups differences, effects of single symptoms, and classification into sub-syndromes with anatomical correlates, b) longitudinal studies tracking changes associated with disease progression, and c) assessment of genetic effects comparing structural differences in twins, both in cross-sectional and longitudinal designs.

Monday, April 4, 2005

S-27. Symposium: Catatonia - a neuropsychiatric syndrome across psychiatric diagnoses

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