

P-12-002**Processing speed impairment is related to white matter damage in schizophrenia**

O. Rilo (University of Deusto Department of Methods and Expe, Bilbao, Spain), J. Pena, N. Ibarretxe, O. Rusu, A. Loizaga, R. Avila, C. Schretlen, M. Varvaris, N. Ojeda

Objective: Schizophrenia is associated with impairment in many cognitive functions, but processing speed (PS) may be considered the most prevalent deficit in this disorder. This cognitive function has been related to white matter (WM) integrity in other pathologies and in healthy aging in several brain areas. Our aim is to investigate the relationship between performance on tasks of PS and whole brain WM fractional anisotropy (FA) in schizophrenia.

Methods: We recruited 76 stable outpatients with schizophrenia (mean age = 37), and 43 healthy controls (mean age = 43). Participants were given an extensive battery of neuropsychological tests and a diffusion tensor MR scan on a Siemens 3T scanner. Total correct responses on the letter portion of the Salthouse Perceptual Comparison Test (PCT) were considered indicative of PS and were correlated with WM FA values. Whole-brain voxel-wise regression analysis of PS and cerebral WM FA data was performed using TBSS (Tract-Based Spatial Statistics) as implemented in FSL software.

Results: Participants with schizophrenia performed significantly worse than controls on the PCT ($p < .001$). Moreover, we found greater WM integrity in the control group than in participants with schizophrenia ($p < .05$). The strongest positive correlation between performance on the PCT and FA was found in a cluster of voxels ($n = 42632$) involving the corpus callosum and the forceps minor ($p_{corrected} = .002$), and other brain regions such as the right cerebral peduncle, right corticospinal tract, right inferior fronto-occipital fasciculus, right uncinate fasciculus, bilateral inferior longitudinal fasciculus, left superior longitudinal fasciculus, left optical radiation, right anterior thalamic radiation and bilateral acoustic radiation. However, no correlations between FA values and PCT scores were found in controls.

Conclusion: Our results reinforce the previously documented impairment on tasks of PS in patients with schizophrenia as well as the relationship between widespread decreased WM FA in the brain and deficits in PS.

Policy of full disclosure: None.

P-12-003**White matter pathways of the salience system are altered in schizophrenia**

T. Bracht (University Hospital Bern Psychiatry and Psychotherapy, Bern, Switzerland), H. Horn, W. Strik, A. Federspiel, N. Razavi, K. Stegmayer, R. Wiest, T. Dierks, T. Mueller, S. Walther

Objective: The salience system in schizophrenia has been linked to the emergence of delusions on the one hand and to negative symptoms such as affective flattening on the other hand. These hypotheses are based on a growing body of functional magnetic resonance imaging studies. However, to date no study in schizophrenia investigated the white matter pathways connecting core regions of the salience system. It was the aim of the study to extract connection pathways of the salience system in schizophrenia. We hypothesized alterations of structural integrity of these pathways in schizophrenia.

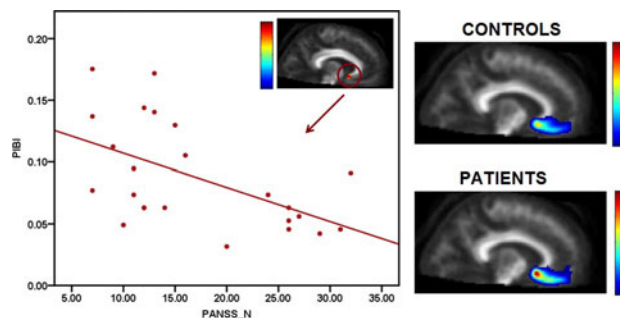
Methods: 24 patients with schizophrenia and 22 healthy controls matched for age and gender underwent diffusion tensor imaging (DTI) scans. Using a probabilistic fibre tracking approach we extracted connection pathways between the ventral tegmental area, the nucleus accumbens, the amygdala, the hippocampus, the anterior cingulate

cortex, the medial and lateral orbitofrontal cortex and the dorsolateral prefrontal cortex. Connection probabilities were compared between groups using two sample t tests ($p < 0.05$, FWE correction).

Results: We identified widespread alterations of connections pathways between core regions of the salience system. In schizophrenia connection probabilities were increased, whereas the spatial extension of connection pathways was decreased. There was a negative correlation of connection probabilities and PANSS negative scores in schizophrenia.

Conclusion: Alterations of white matter pathways of the reward system in schizophrenia may contribute to the emergence of delusions and negative symptoms in schizophrenia.

Policy of full disclosure: None.

Association of probability of connection and PANSS negative scores of the Nucleus accumbens: orbitofrontal cortex connection:**P-12-004****Grey matter differences between bipolar patients and controls: a voxel-based morphometry meta-analysis**

R. Ganzola (Institut universitaire Giffard, Quebec, Canada), S. Duchesne

Objective: Bipolar Disorder (BD) is amongst the most common psychiatric illnesses. Multiple Magnetic Resonance (MR) studies have attempted to clarify neurostructural abnormalities occurring in BD. We present a retrospective meta-analysis of grey matter differences identified by voxel-based morphometry.

Methods: We selected all 14 articles comparing GM differences between BD patients to control in the BrainMap database (<http://brainmap.org/>). We used their software (Sleuth), which is able to identify experiments of interest via keywords (voxel based morphometry studies, subjects with BD diagnostic) and view the relevant results in a standard brain space (Talairach). We separated the comparisons where BD patients had lesser GM volumes than controls (958 subjects, 26 experiments, and 93 locations) from the comparisons where BD patients had greater GM volumes than controls (276 subjects, 9 experiments, 45 locations). We performed the meta-analysis on these two paradigms (BD patients <controls and BD patients > controls) with the GingerALE software.

Results: We found lesser GM volumes bilaterally in the prefrontal cortex, medial fronto-temporal gyrus, and in the anterior cingulate gyrus of BD patients when compared to controls. Further, we found less GM tissue in the inferior frontal and parietal cortex, and in the caudate nucleus in the left side, in the insula and in the superior temporal and parietal lobe in the right side. BD patients showed greater GM volumes in the left hippocampal head and bilaterally in the medial frontal cortex, posterior cingulate gyrus, postcentral gyrus and precuneus.