S158. REWARD ALTERATIONS IN ANTIPSYCHOTIC NAÏVE FIRST-EPISODE-PSYCHOSIS PATIENTS BEFORE AND AFTER TREATMENT WITH A PARTIAL DOPAMINE AGONIST

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Background: Alterations of the brain reward system is a common finding in patients with psychoses and it may be affected by antipsychotic medication. There are however only few longitudinal studies on medication effect and the effect of a partial dopamine agonist have not previously been examined in patients. The aim of the present study is to explore reward abnormalities in first episode psychotic patients and matched heathy controls (HC) before and after treatment with a partial dopamine agonist (aripiprazole), and relate the findings to dopamine synthesis capacity (F-DOPA-PET), glutamate and GABA levels in the brain (MRS at 3T) and treatment outcome. Here we present preliminary baseline and follow up analyses on functional magnetic resonance imaging (fMRI) only.
Methods: The project is a part of a multimodal prospective cohort study. Reward related brain activity was examined with fMRI using a variant of the Monetary Incentive Delay Task before and after 6 weeks, where patients were treated with individual doses of aripiprazole. Psychopathology was measured with the Positive and Negative Syndrome Scale (PANSS). Whole brain voxel-wise group comparison was performed at baseline and follow up using two sample t-test with a corrected cluster significant threshold of P=0.05. Likewise, the effect of time and group time interaction was analyzed voxel-wise.
Results: Inclusion is ongoing and data have been analyzed for 19 patients, age 22.9(4.6), 9 males (47%) and 24 HC, age 22.1(2.7), 11 males (46%). Mean medication dose was 11.7 (6) mg aripiprazole at follow up.
Psychopathology: At baseline patients were moderately ill with a mean PANSS total score of 69 (14). Paired t-test showed a significant reduction over time for PANSS total score to 57 (12) ($P<0.001$), with significant improvements in PANSS positive, PANSS negative and PANSS general scores (all $p<0.05$).
fMRI: There were no group differences at baseline.
At follow up, patients had an increased signal in medial frontal cortex and Anterior Cingulate Cortex (ACC) compared to HC during anticipation of monetary gain. During outcome evaluation, patients likewise had an increased signal in right striatum and paracingulate gyrus in the win contrast, increased signal in left ventral part of striatum and ACC in the lose contrast, and increased signal in right striatum and ACC in the miss contrast compared to HC. There was only a significant effect of time in patients in the anticipation to win contrast and no significant group time interaction.
Discussion: The data represent work in progress and should be taken with precaution. The group-differences at follow up which were not found at baseline may suggest that treatment with a partial dopamine agonist lead to alterations of reward processing in patients. This is further supported by the effect of time in patients in the anticipation to win contrast. The data collection is still ongoing, and we expect to increase the size of the cohort and plan to relate the findings to measures of dopamine, GABA, glutamate and psychopathology.

S159. REDUCED PROCESSING SPEED IN SCHIZOPHRENIA IS MEDIATED BY WHITE MATTER INTEGRITY

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Background: Meta-analysis suggest that processing speed deficit is the largest single cognitive impairment in schizophrenia. Processing speed predicts functional outcome and indicates a vulnerability marker for schizophrenia. Several authors have proposed that abnormalities in white matter is related to reduced processing speed in schizophrenia. The purpose of this research was to investigate the relationship between processing speed and structural properties of white matter pathways in schizophrenia and healthy controls.
Methods: The data using this study were from the SchizConnect. Participants included 64 patients with schizophrenia and 71 healthy controls. Diffusion tensor imaging(DTI) method was used to measure fractional anisotropy along white matter tracts. Group differences in white matter integrity-inferred from fractional anisotropy (FA), processing speed, verbal memory were examined. Mediation analysis were applied to inspect the relationship between FA and cognitive performance.
Results: Participants with schizophrenia had significantly reduced processing speed, verbal memory deficits, and whole-brain fractional anisotropy deficit. There were significant group differences in white matter integrity of the left thalamus occipital, right extreme capsule, and right thalamus occipital. FA in left thalamus occipital and right extreme capsule mediated group differences in processing speed, but not other cognitive domains.
Discussion: Study findings indicate that mediation effect of processing speed is regional tract-specific. These finding suggest that the structural integrity of white matter tracts associated with left thalamus occipital, right extreme capsule is closely related to reduced processing speed in schizophrenia, but not verbal memory and verbal learning.

S160. INTERACTIONS BETWEEN BOTTOM-UP AND TOP-DOWN ATTENTION DURING WORKING MEMORY ENCODING: EVALUATION OF AN FMRI PARADIGM FOR THE STUDY OF COGNITIVE DYSFUNCTION IN SCHIZOPHRENIA

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Background: Patients with schizophrenia suffer from profound impairments of working memory and selective attention. These cognitive domains show a considerable overlap on both the behavioral and neurophysiological level. Importantly, selective attention appears to be crucial for the selection of information to be encoded into working memory. A number of studies have demonstrated that the efficiency of this "gatekeeper" function influences working memory performance. Furthermore, behavioural evidence indicates, that patients with schizophrenia have a specific deficit when required to suppress irrelevant but highly salient visual information during working memory encoding. Therefore, elucidating the neurophysiological mechanisms underlying the "gatekeeper" function of selective attention for working memory is highly relevant for understanding this deficit in schizophrenia. The aim of the current study was to investigate the neurophysiological correlates of encoding either salient or non-salient information in the presence of distractors of opposite saliency using functional magnetic resonance imaging (fMRI). Furthermore, we wanted to study the impact of additional top-down information guiding the selection of task relevant information.
Methods: 35 healthy volunteers underwent fMRI in a 3 T Siemens Trio scanner. During a change detection task four Gabor patches (two flickering and two non-flickering) with varying orientations were shown and participants had to memorise the orientations of the Gabor patches. A colored fixation cross was displayed before the stimuli either cueing two (predictive cue) or four (non-predictive cue) Gabor patch locations resulting in a 2 x 2 design of four conditions with the factors salience (flickering vs. non-flickering)