

## S17. Brain imaging in neuropsychiatric disease

*Chairs:* M. Gaviria (USA), C. Arango (E)

### S17.01

#### FUNCTIONAL NEUROIMAGING OF COGNITION: A CHALLENGE TO NEUROPSYCHOLOGY

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Neuropsychology surged as a response to clinician's needs for an accessible tool that allows the assessment and rehabilitation of brain dysfunction. At the beginning, neuropsychologists and cognitive neuroscientists used traditional methods, especially standardized tests, but in the recent years, the design of cognitive paradigms have evolved in order to integrate them with more complex technologies, such as functional neuroimaging techniques, in the study of the working brain. Functional magnetic resonance imaging (fMRI) and positron emission tomography (PET), are used to visualize brain functioning when subjects perform specific cognitive tasks or are exposed to specific stimuli. In this paper we will discuss how brain imaging and cognitive sciences have become part of a multidisciplinary team that take advantage of recent innovations in separate fields like computing sciences and parametric statistics to reach a better understanding of psychopathology and frequent neuropsychiatric conditions.

### S17.02

#### STRUCTURAL FINDINGS IN NEUROPSYCHIATRIC DISORDERS: THE ROLE OF STRESS

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Stress-induced changes in the glucocorticoid system may be toxic for hippocampal cells in animals. Chronic stress is associated with some neuropsychiatric disorders, including schizophrenia, major depression, posttraumatic stress disorder and bipolar disorder. These disorders are different in their clinical presentation and underlying pathophysiology, but a reduced hippocampal volume has been reported in all of them. It has been proposed that the hippocampal volume reduction in these neuropsychiatric disorders may be mediated via stress-induced glucocorticoid neurotoxicity. We will compare the existing data with our observations that support the thesis that some neurostructural findings may be secondary to the disease and not viceversa. Results of a current study in which we are measuring hippocampal volume and cortisol levels in patients with schizophrenia will be presented in this speak.

### S17.03

#### FUNCTIONAL IMAGING IN NEURODEVELOPMENTAL DISORDERS

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Recent advances have led to the realisation, that many childhood onset disorders are likely due to abnormalities in brain development and brain maturation. Tourette's Syndrome (TS) is an excellent example of a childhood onset neuropsychiatric disorder; hence we

set out to study the brain activity associated with premonitory urge in patients with TS by means of functional MRI. We obtained five 7 millimetre coronal slices perpendicular to the AC-PC line, on a 1.5 T MRI using a spiral gradient echo technique. Subject were cued to blink at 50% of their resting baseline blink rate during the "urge" condition and at 200% during "no urge" condition, respectively. Standard subtraction technique was used to compare two conditions, "urge" vs. "no urge". We report data from six general population controls and six patients with TS. Five of 6 control subject showed activation of left dorsolateral prefrontal cortex (DLPC) and only one of the 6 TS subjects showed this activation. Unlike controls, all 6 TS subject activated the left medio-orbital cortex (MOFC). These findings are consistent with the view that DLPC inhibitory function is impaired in TS patients and MOFC has been recruited to inhibit the urge to blink. Further work is necessary to replicate these results and to explore the effect of co-morbid conditions, primarily

### S17.04

#### INSULAR CORTEX ABNORMALITIES IN SCHIZOPHRENIA: CLINICAL CORRELATES AND SIGNIFICANCE

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The insular cortex is a limbic integration region that is engaged in emotional and cognitive functions. To investigate possible insular cortex abnormalities in schizophrenia, we measured insular gray matter volume and cortical surface size in drug naive first episode patients. Magnetic resonance images were used to explore the morphology of the insular cortex of 25 healthy male volunteers, and 25 male schizophrenic patients. Groups were matched for age, sex, height, and parental socioeconomic status. Clinical dimension scores were correlated with insular gray matter volume and cortical surface area.

Patients had a significant reduction in cortical surface area (patients = 2020 (206); controls = 2142 (204);  $F = 5.83$ ,  $df = 1.47$ ;  $p = .01$ ) and gray matter volume (patients = 8.12 (0.77); controls = 8.57 (0.94);  $F = 3.93$ ,  $df = 1.47$ ;  $p = .05$ ) in the left insular cortex. Insular gray matter volume and cortical surface size correlated negatively and significantly with the psychotic symptom dimension. Schizophrenic patients show morphological abnormalities in the insular cortex at early stages of the illness. These abnormalities are related to the severity of psychotic symptoms in schizophrenia. Further investigations are needed to evaluate the role of the insula in the pathophysiology of schizophrenia

## S18. Psychiatry and human rights. Involuntary commitment in Europe

*Chairs:* L. Singer (F), B. Lachaux (F)

### S18.01

#### INVOLUNTARY, COMPULSORY OR COERCED TREATMENT: NEW TRENDS IN BELGIUM

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Since 1990 involuntary civil commitment in psychiatric units is in Belgium no longer an administrative decision but a judicial one involving the justice of the peace.