



centro ricerche cliniche di verona

Study Code: CRC/2008/03

Study Title: A double blind, single dose, randomized, 2-way crossover, placebo controlled study to set-up the resting state test in 10 healthy subjects.

Eudract number: 2009-013069-24

## **“fMRI IN RESTING STATE AS A RADIOLOGICAL TOOL IN PHARMACEUTIC RESEARCH: AN EXPERIMENTAL CLINICAL TRIAL WITH ALPRAZOLAM”. Poster at RSNA meeting 2011**

### **PURPOSE**

The aim of the study was to highlight the presence of modifications in the Default Mode Network (DMN) detected by means of fMRI in Resting State after the administration of a neurotropic drug, the Alprazolam, and therefore to suggest fMRI as an alternative and non invasive tool for future pharmacological experimentations in vivo.

### **METHOD AND MATERIALS**

11 healthy subjects (5 males; mean age: 32 years) were enrolled in a double-blind randomized study. They received Alprazolam or placebo and underwent two fMRI scans each. Data were acquired at 1.5 T (Magnetom Symphony, Siemens, Erlangen, Germany). Functional connectivity and activation maps were obtained by means of independent component analysis using FSL (FMRIB software Library 4.1, Oxford, UK). A F-test ( $p < 0.05$ ) was applied in order to detect statistical differences between groups and Dual-Regression ( $p < 0.05$ ) permitted to obtain spatial maps defining the between-subject group-consistency.

### **RESULTS**

The reproducibility of fMRI in Resting State was demonstrated with a consistent detection of DMN in all subjects and all conditions, furthermore a statistically non-significant difference between baselines was found ( $p < 0.11242$ ). The Dual-Regression analysis showed a diffuse significant higher functional connectivity in the brain after the administration of Alprazolam, mainly in the precuneus/posterior cingulate cortex within the DMN, and also between the DMN and other cerebral areas, in particular the basal ganglia. No significant differences in DMN were detected after placebo administration.

### **CONCLUSION**

fMRI in Resting State reproducibility was demonstrated and connectivity modifications in DMN and other cerebral areas occur after Alprazolam administration.

### **CLINICAL RELEVANCE/APPLICATION**

fMRI should be considered an applicable model in humans during future clinical trials.

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