Abnormal conectivity in frontal dorsal cortex in schizophrenia patients and unaffected relatives

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Objectives

The aim of this study is to explore connectivity of the Frontal Dorsal Cortex (FDC) by Functional Magnetic Resonance Imaging during Resting State, in subjects affected by schizophrenia and unaffected relatives.

Methods

We recruited a group of 29 patients diagnosed with schizophrenia, who were treated with atypical antipsychotics, who are and were clinically stable in the last 6 months and had an illness duration range from 5 up to 15 years. We also recruited a group of 23 unaffected relatives, without history of other mental, neurological or somatic disease and a group of 37 healthy volunteers. No subject in any of the three groups met criteria for substance use disorders

All three groups were clinically evaluated, and a functional magnetic resonance during Resting State was performed.
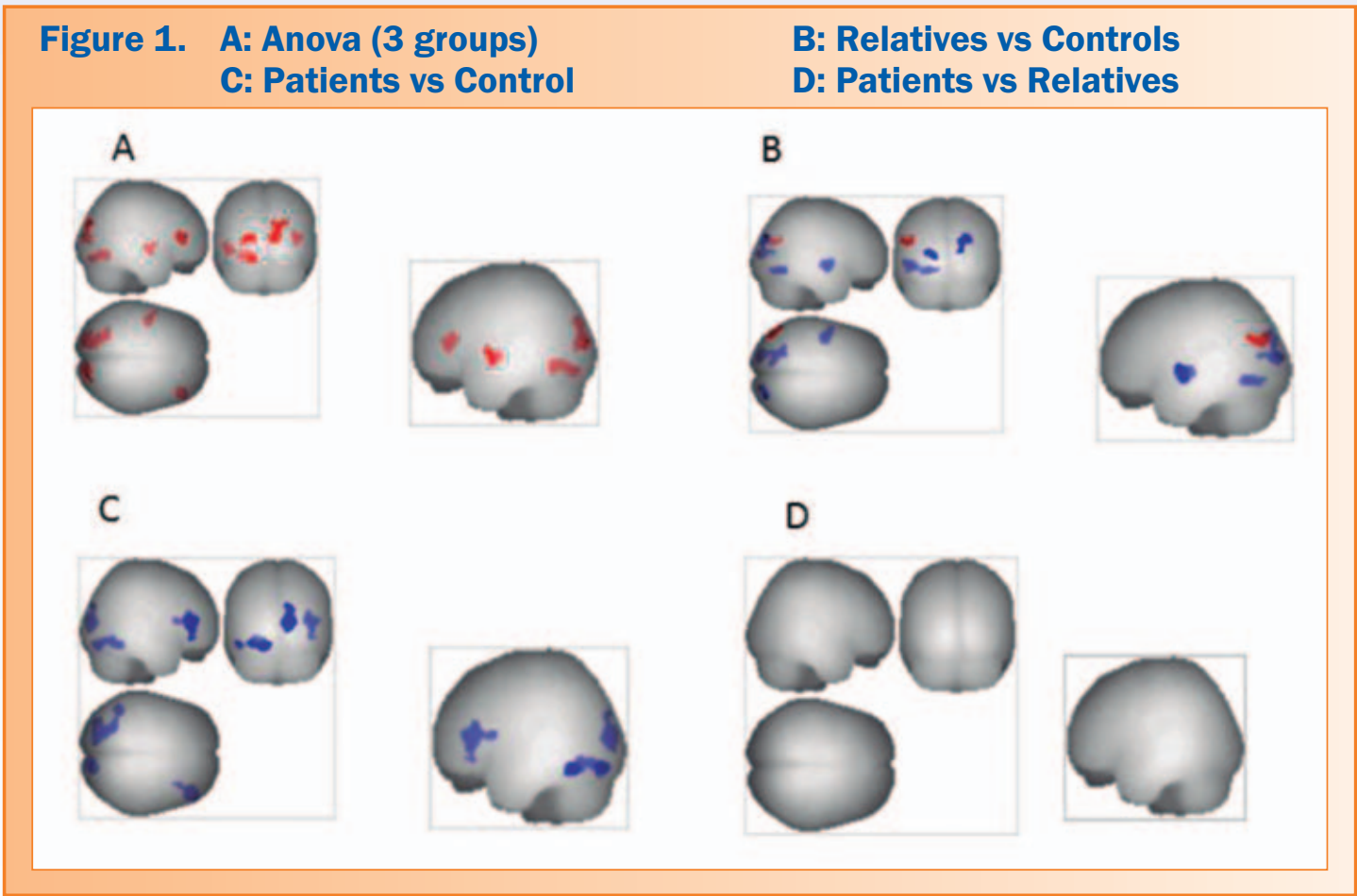
Functional images were reoriented to the first scan, normalized to the MNI EPI template and smoothed with an 8 mm Gaussian kernel, with SPM. The CONN- FMRI Toolbox v1.2 was used to create individual subject seed-to-voxel connectivity maps, to the corresponding seeds of the default mode network.

ANOVA Model (p< 0.01) - Extent P FWE-corrected
Post hoc analyses (Voxel-vise FDR corrected p<0.05)

Results

Table 1: Demographic characteristics of patients with schizophrenia, unaffected siblings and healthy controls.

	Patients n=37	Unaffected Siblings n=24	Healthy Controls n=29	P
Mean Age (years) ± SD	36.78 ± 7.61	40.92±10.32	37.97±7.13	0.165[a]
Gender (M/F)	17/20	11/13	16/13	0.713[b]
School Level (years) ± SD	12.89±1.76	11.50±2.65	10.00±2.80	0.033*[a]
PANSS Positive			10.13±1.43	
PANSS Negative			13.29±2.21	
GAF			68.5±5.67	
SD: Standar Desviation	a: Anova			
M: Male F: Female	b: Chi- square tests		*:Significant Differences	

Figure 1.   A: Anova (3 groups)   B: Relatives vs Controls
C: Patients vs Control   D: Patients vs Relatives

Conclusions

● Our results show a significant decrease in connectivity between the FDC with de *Dorso Lateral Prefrontal Cortex* and *visual association areas*, in patients and unaffected relatives with respect to controls.

● And abnormal connectivity between the FDC with de Dorso Lateral Prefrontal Cortex should be studied with the clinical correlation with alterations in executive functions, such as working memory, cognitive flexibility, planning, inhibition, and abstract reasoning

Key Words: Brain imaging, Schizophrenia: clinical, Neuroimaging: functiona