Abnormal connectivity in Precuneus in schizophrenia patients and unaffected relatives

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Objectives

The aim of this study is to explore the connectivity between Precuneus and other areas of the brain, by Functional Magnetic Resonance Imaging during Resting State, in subjects affected by schizophrenia and unaffected relatives.

Methods

PATIENTS
n: 29
Diagnosed schizophrenia
Atypical antipschotics
Clinically stable >6 months
Illness duration 5-15 years
No ECT or Clozapine treatment

UNAFFECTED RELATIVES
n: 23
Relative of patient with schizophrenia
No history of mental disease

HEALTHY CONTROLS
n: 37
No personal or familiar history of mental disease

Clinically evaluated
Functional magnetic resonance: Resting State

Functional images were reoriented to the first scan, normalized to the MNI EPI template and smoothed with an 8mm 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.

Data analysis

Clinical Data → ANOVA Chi-square

fMRI images ANOVA Model (p< 0.01) → Extent P FWE- corrected

Post hoc analyses → (Voxel-vise FDR corrected p<0.05) (p<0.0.1) Extent P FWE- corrected

Results

Table 1. Demographic characteristics

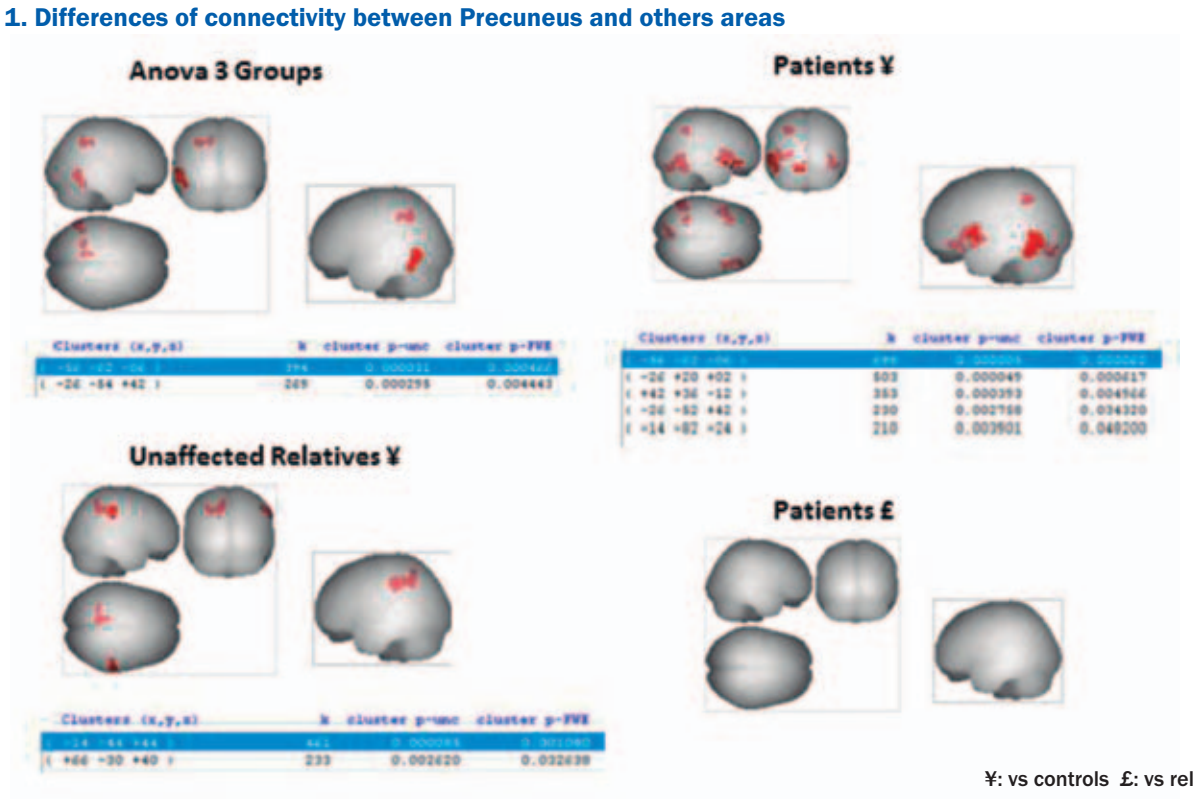
	Healthy controls n=37	Unaffected relatives n=24	Patients n=29	p
Age (years), mean±SD	36.78±7.61	40.92±10.32	37.97±7.13	0.165
Gender (M/F)	17/20	11/13	16/13	0.713
School level (years), mean±SD	12.89±1.76	11.50±2.65	10.00±2.80	<0.05*

Table 2. Differences of connectivity of precuneus (voxels covering)

	3 Groups	Patients ¥	Relatives ¥	Patients £
Left fusiform gyrus	239	357	–	–
Left dorsal posterior cingulate	53	–	50	–
Left somatosensorial association	138	66	33	–
Left–right supramarginal gyrus	62	60	20	–

¥: vs Controls £: vs Unaffected Relatives

Figure 1. Differences of connectivity between Precuneus and others areas



¥: vs controls £: vs relatives

Conclusions

- Our results show a significant increase in connectivity between precuneus and left fusiform gyrus cortex, especially between patients and controls.
- It is noteworthy to mention that we found a significant increase in connectivity between precuneus and left dorsal posterior cingulate between unaffected relatives and controls.
- Our results also show a significant increase in connectivity between precuneus and left somatosensorial association, left fusiform gyrus, left and ight supramarginal gyrus. There are no significant differences between patients and relatives in all those areas.

References

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