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Comprehensive Psychiatry 55 (2014) 1015–1021

COMPREHENSIVE PSYCHIATRY

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Can cognitive deficits differentiate between schizophrenia with and without obsessive–compulsive symptoms?

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Abstract

Background: The frequent occurrence of obsessive–compulsive symptoms (OCS) in the course of schizophrenia and their impact on the functional outcome of the illness underlie the suggestion that the presence of OCS represents a separate subtype of schizophrenia, with a distinct clinical presentation and prognosis and specific neurobiological characteristics. This study investigated whether the presence of OCS in schizophrenia is associated with worse cognitive functioning in the domains of processing speed, executive functions and visuospatial memory. We also explored whether the degree of impairment in any of these cognitive domains could predict group membership (i.e. Schizophrenia with OCS [Sch-OCS] and Schizophrenia without OCS) and if there was a relationship between cognitive functioning and severity of OCS within the Sch-OCS group.

Methods: Forty patients with schizophrenia, 20 with and 20 without OCS, individually matched for age, gender, years of education and severity of psychotic symptoms and 20 healthy controls underwent a comprehensive neuropsychological assessment.

Results: Only lower performance in processing speed discriminated patients with OCS from patients without OCS. Processing speed impairment not only classified patients in OCS or non-OCS group but was also independent of the severity of OCS symptoms.

Conclusions: The notion of additive effects of both schizophrenia and OCD on the structural and functional integrity of the brain circuits that support cognitive functions warrants further investigation in longitudinal neuropsychological and neuroimaging studies with larger samples and sufficient variation in the severity of OCS.

1. Introduction

Obsessions and compulsions are quite frequent in the course of schizophrenia with a prevalence rate of 25% for obsessive compulsive symptoms (OCS) and 12.1% for obsessive–compulsive disorder (OCD) [1,2]. The presence of obsessions and compulsions in schizophrenia is currently thought to be associated with worse functional outcome of the illness in terms of vocational outcome, independent living and social relationships [3]. In patients with first-episode schizophrenia, the presence of OCS is associated with lower quality of life [4] and OCD is associated with worse premorbid functioning, more severe depressive symptoms, and social dysfunction [5].

The frequent occurrence of OCS in the course of schizophrenia and their impact on the functional outcome of the illness are the main factors underlying the suggestion that the presence of OCS/OCD represents a separate, i.e. "schizo-obsessive", subtype of schizophrenia, with a distinct clinical presentation and prognosis and specific neurobiological characteristics [6,7]. It has also been suggested that patients with schizophrenia and OCS/OCD would show worse performance in cognitive domains impaired in both schizophrenia and OCD, reflecting the additive effects of both illnesses on the structural and functional integrity of the brain systems that support these cognitive functions [7–9].

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http://dx.doi.org/10.1016/j.comppsych.2013.12.004

Based on the above hypothesis, the presence of OCS/OCD in patients with schizophrenia would be expected to worsen their performance in processing speed, visuospatial memory, and executive function tasks, as OCD patients show marked impairments in these domains compared to healthy individuals [10]. Until now, research on the association between OCS and cognitive functioning in schizophrenia has yielded mixed results, with some studies showing that patients with schizophrenia and OCS/OCD have worse performance on specific cognitive domains compared to patients with schizophrenia without OCS/OCD [7,9,11–15], others showing no significant differences [16–22] and a few studies showing better performance of patients with OCS on some neuropsychological tasks [23].

Many factors could account for these contradictory results, such as the sample size of the studies, the use of control groups, the heterogeneity of the neuropsychological tests used, or the differences in the definition and the application of diagnostic criteria for OCS used, all the more so since ideas with mixed characteristics of delusions and obsessions or delusionally motivated repetitive behaviours are often present in schizophrenia [6,24]. In addition to the above, uncontrolled differences in factors with known impact on cognitive performance, such as age at assessment, age of illness onset, general intelligence and severity of psychotic symptoms could have substantial contribution to the contradictory results so far [25,26].

In this study we investigated the cognitive profiles of patients with schizophrenia with and without OCS in two groups of patients with schizophrenia. We included a group of healthy individuals as control group. Additionally, we controlled for factors with known potential influence on patients' cognitive performance, as above (i.e. age, gender, and years of education and severity of psychotic symptoms for the two groups of patients).

We hypothesised that patients with schizophrenia and OCS (Sch-OCS) would perform worse in processing speed, executive function and visuospatial memory measures compared to patients with schizophrenia without OCS (Sch). We also explored whether the degree of impairment in any of these cognitive domains could predict group membership (i.e. Sch-OCS and Sch groups) and if there was a relationship between cognitive functioning and severity of OCS within the Sch-OCS group.

2. Methods

2.1. Participants

The sample of our study consisted of 40 participants with schizophrenia, 20 with and 20 without OCS, and 20 healthy controls (HC). All participants were recruited from the outpatient services of the 1st and 2nd Departments of Psychiatry of the National and Kapodistrian University of Athens. Greece. The participants of the Sch-OCS group were individually matched to the Sch patients and healthy participants for gender, age (±5 years), and education (±3 years). All patients had a DSM-IV diagnosis of schizophrenia and met the following inclusion criteria: age between 18 and 55 years, clinically stable in a non-acute phase for 6 months prior to their inclusion in the study and treatment with stable doses of antipsychotics for at least 4 weeks prior to their inclusion in the study. Healthy participants were recruited from the local communities and had no personal history of psychiatric disorder or family history of psychosis. The exclusion criteria for all participants included history of head injury, mental retardation, history of a serious neurological disorder or a systemic illness with known neurological complications, DSM-IV diagnosis of alcohol or substance abuse (other than nicotine) within the last month or a DSM-IV diagnosis of alcohol or substance dependence (other than nicotine) in the last 6 months preceding their inclusion in the study.

The OCS in Sch-OCS group were defined according to the DSM-IV criteria for obsessions and compulsions with the additional condition that the content of OCS should not be associated with the content of the patients' delusional ideas and auditory hallucinations, in order to exclude any ideas with mixed characteristics of delusions and obsessions or delusionally motivated repetitive behaviours [6,24].

All patients were taking antipsychotics at the time of the study assessments. Antipsychotic doses were converted to chlorpromazine equivalents. All other types of medications the patients were taking at the time of the study assessments were also recorded.

After complete description of the study to the participants, informed, written consent was obtained. The study was approved by the Hospital ethics committee.

2.2. Measures

2.2.1. Clinical assessments

The diagnosis of schizophrenia was confirmed with the Structured Clinical Interview for DSM-IV Axis I Disorders [27]. The severity of psychotic symptoms was assessed with the Positive and Negative Syndrome Scale (PANSS) [28]. We scored the PANSS across five subscales corresponding to the following symptom-dimensions: positive, negative, excitement, cognitive, and depression [29]. The severity of OCS was measured with the Y-BOCS scale [30] and all patients in Sch-OCS group had at least mild OCS severity (Y-BCOS score $\geq$ 8). All clinical assessments were performed by two experienced raters (PM and GK). Additional information relevant to the study was obtained from the patients' medical records and treating physicians.

2.2.2. Neuropsychological assessments

A comprehensive neuropsychological battery was administered to all participants. The Vocabulary subscale of the Wechsler Adult Intelligence Scale (WAIS) [31] was used to estimate general intelligence. We chose a priori specific measures as dependent variables from each neuropsychological test used in the study. The cognitive domains that