The impact of obsessive dimension on symptoms and functioning in schizophrenia

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ARTICLE INFO

Article history:

Received 6 November 2014

Received in revised form

30 September 2015

Accepted 5 October 2015

Available online 9 October 2015

Keywords:

Schizophrenia

Obsessive–compulsive symptoms

Positive symptoms

Negative symptoms

Functioning

ABSTRACT

Obsessive Compulsive Symptoms (OCS) and Disorder (OCD) occur frequently in patients with schizophrenia. Nevertheless the impact of OCS/OCD on clinical characteristics and outcome of schizophrenia remains controversial. The aim of the present study is to examine the effect of obsessive–compulsive dimension on symptom expression and functioning in schizophrenia. Sixty patients affected by schizophrenia completed the SCID-IV, the Positive and Negative Syndrome Scale, the Yale-Brown Obsessive–Compulsive Scale, the Social and Occupational Functioning Assessment Scale and the Strauss and Carpenter Level of Functioning Rating Scale. Obsessive–compulsive dimension was associated neither with positive or disorganization symptoms nor with negative symptoms. By contrast, it adversely affected levels of functioning, with a major impact exerted by compulsions rather than obsessions. Obsessive–compulsive dimension appears to be independent from negative and positive symptoms of schizophrenia and independently decreases social functioning.

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1. Introduction

Obsessive Compulsive Symptoms (OCS) and Disorder (OCD) occur frequently in patients with schizophrenia with a rate varying from 10% to 64% for OCS and from 7.8% to 31.7% for OCD (de Haan et al., 2013a, 2013b). Nevertheless the impact of OCS/OCD on clinical characteristics and outcome of schizophrenia remains controversial (Poyurovsky et al., 2012; de Haan et al., 2013a, 2013b). Whereas early studies (Jahrreiß, 1926; Stengel, 1945; Rosen, 1957) considered OC features as a compensatory attempt to reduce psychotic symptoms and to delay the “personality disintegration”, subsequent research yielded contradictory results. In fact, OCS/OCD were found to be associated either with less severe delusions and formal thought disorders (Poyurovsky et al., 1999), with higher levels of positive symptoms (Öngür and Goff, 2005; Tiryaki and Ozkorumak, 2010) or, as shown in a recent meta-analysis (Cunill et al., 2009), with more severe global, positive and negative symptoms. Finally, other studies failed to reveal any differences in schizophrenic symptoms between patients with and without OCS/OCD comorbidity (Eisen and Rasmussen, 1993; Beriman et al., 1998; Hwang et al., 2000; Krüger et al., 2000; Byerly

et al., 2005).

As for the clinical outcome, following the seminal work by Fenton and McGlashan (1986), OCS/OCD in schizophrenia have been consistently associated with a worse clinical course, lower quality of life, greater disability (Poyurovsky et al., 2012) and poor social functioning (de Haan et al., 2013a, 2013b), thus challenging the early concept of OCS/OCD as a protective factor. On the other hand, other authors (Byerly et al., 2005) have failed to find a relevant impact on functional status in schizophrenic patients. This discrepancy has been related by some authors to a phase-dependent effect of obsessive phenomena on the expression of psychotic symptoms (Poyurovsky et al., 2004; Bottas et al., 2005).

Moreover, the heterogeneity of methodological approaches among the studies have precluded conclusive assertions, including the different cut-off level adopted for obsessive symptomatology (OCS vs OCD) (de Haan et al., 2013a, 2013b). In fact OCS and OCD might differentially impact on functioning, as recently suggested (Üçok et al., 2011; de Haan et al., 2013a, 2013b). Therefore, a dimensional rather than a categorical approach might permit a more accurate determination of the specific effect of obsessive phenomena on other symptomatic dimensions and on the course of illness in schizophrenia. Moreover, in recent years a dimensional approach to schizophrenia has been strongly emphasized; in fact the cross-sectional heterogeneity in clinical expression may be better understood by identification of distinct psychopathological dimensions (Tandon et al., 2009; Insel, 2010). Using a dimensional

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model, Guillem et al. (2009) found that obsessions were positively related to delusions and compulsions to hallucinations. However, studies adopting a dimensional perspective are scarce and, to our knowledge, at present no studies investigated the impact of OC dimension on both clinical characteristics and level of functioning in schizophrenia. Therefore the aim of the present study was to investigate the relationship between OC and other symptom dimensions in schizophrenia and the impact of OC phenomena on social functioning.

2. Methods

2.1. Participants

The study enrolled schizophrenic patients who sought treatment at the Psychiatric Unit of the University Hospital of Parma from January 2012 to December 2012. Patients were included in the study if (1) they were aged over 17 years; (2) they received a diagnosis of schizophrenia, according to DSM-IV criteria; (3) a written informed consent was obtained.

The study sample was preselected in order to guarantee that the full range of severity of the obsessive–compulsive dimension was represented: specifically, at least the first 25 patients with absent-mild OCS (YBOCS score lower than 16) and the first 25 patients with moderate–severe OCS (YBOCS higher than 15) were included in the study.

Patients were excluded if they were affected by (1) a current mental disorder related to a general mental condition or to a drug or alcohol abuse or dependence (2) a cognitive disorder (Mini-Mental State Examination score lower than 25) which might impair the compliance with testing procedures.

2.2. Procedures

All subjects completed (1) the Structured Clinical Interview for DSM-IV Disorders (SCID-IV) (Mazzi et al., 2000); (2) the Positive and Negative Syndrome Scale (PANSS) (Kay et al., 1987) for the evaluation of positive, negative and general psychopathology symptoms; (3) the Yale-Brown Obsessive–Compulsive Scale (YBOCS) (Goodman et al., 1989) for the assessment of OCS; (4) the Social and Occupational Functioning Scale (SOFAS) (American Psychiatric Association, 2000) and the Strauss and Carpenter Level of Functioning Rating Scale (SC-LFRS) (Strauss and Carpenter, 1974) for the evaluation of the level of functionality.

Five PANSS subscale scores were used: positive symptoms, negative symptoms, disorganization, general psychopathology and total score. The disorganization score was computed by summing the items of conceptual disorganization (P2) and mannerisms and posturing (G5).

According to DSM-IV diagnostic criteria (American Psychiatric Association, 2000), recurrent and persistent thoughts which were not related to individual delusional themes and hallucinations and were recognized by the patient as intrusive, inappropriate and a product of his/her own mind were considered as obsessions. Similarly, repetitive behaviors that the person felt driven to perform in response to an obsession and that were not interrelated with the content of delusions and/or hallucinations were defined as compulsions.

In order to guarantee an adequate cooperation to the assessment, patients were interviewed by a trained psychiatrist after the resolution of the acute phase of illness.

2.3. Statistical analysis

Pearson correlation analysis (two tailed) was used to evaluate the association between OCS, positive, disorganization, negative and general psychopathology symptoms.

Since the OCS severity did not seem to follow a normal distribution, considering the mean and the SD of the Y-BOCS score, the sample was divided into three sub-groups according to the YBOCS score: schizophrenia patients without OCS, with mild OCS ($Y\text{-BOCS} \leq 7$) and with severe OCS ($Y\text{-BOCS} \geq 8$). Then, the clinical features were compared in the three groups of patients using the one-way analysis of variance.

Two linear regression analyses (step wise method) were used to evaluate the effect of OCS, positive, disorganization and negative symptoms, age, gender, age at onset and illness duration (independent variables) on SOFAS or SC-LFRS scores (dependent variables). Since OCS were highly correlated with the general psychopathological symptoms, latter symptoms did not enter in regression analyses as independent variable to avoid redundancy.

All statistical analyses were performed with SPSS for Windows (version 20.0, SPSS Inc., Chicago, IL, USA).

3. Results

3.1. Participants

Sixty patients, 38 males (63.3%) and 22 females (36.7%) were enrolled into the study. The mean age of the patients was of 36.6 ± 10.1 years; the mean age at onset of schizophrenia was 23.9 ± 6.5 years, while the main duration of illness was 12.5 ± 9.7 years (Table 1).

3.2. Association between symptoms

Neither Y-BOCS total score (14.7 ± 13.3 ; median = 11.5; range: 0–36) nor subtotal obsessions or compulsions scores were associated with PANSS scores with the only exception of the general psychopathology symptoms score (Table 2).

No association was found between specific PANSS and Y-BOCS items.

Patients with mild or severe OCS and patients without OCS did not differ on positive (14.0 ± 3.6 vs 18.1 ± 6.3 vs 18.6 ± 6.76 ; $F=1.85$; $p=0.16$), negative (23.4 ± 9.8 vs 26.6 ± 7.7 vs 6.9 ± 1.8 ; $F=1.15$; $p=0.32$) and disorganization (4.6 ± 1.8 vs 5.7 ± 2.8 vs 6.1 ± 2.8 ; $F=0.93$; $p=0.39$) PANSS subscales scores.

3.3. Symptoms and level of functionality

Stepwise linear regression showed that the level of functionality, both SOFAS (Table 3) and SC-LF scores (Table 4) was

Table 1
Socio-demographic and clinical characteristics of patients with schizophrenia.

Patients with schizophrenia (no. 60)	
Age (mean $\pm$ SD)	36.6 ± 10.1
Gender (males)	No. 38 (63.3%)
Marital status (never married)	No. 52 (86.6%)
Living alone	No. 5 (8.3%)
Education (years)	11.1 ± 3.5
Occupied	No. 13 (21.7%)
Age at onset	23.9 ± 6.5
Illness duration (years)	12.5 ± 7
Number of hospitalizations	4.1 ± 4.3
PANSS	
Positive scale	17.6 ± 6.2
Negative scale	26.6 ± 7.8
General psychopathology scale	45.8 ± 11.9
Disorganization	2.9 ± 1.5
SOFAS	
	39.8 ± 13.8
SC-LF	
No hospitalization	3.5 ± 5.4
Relationship	1.5 ± 1.3
Job	1.4 ± 1.5
Entities of symptoms	1.3 ± 1.1
Total Strauss-Carpenter	7.1 ± 3.9
Y-BOCS	
Subtotal obsessions	7.9 ± 7.3
Subtotal compulsions	6.5 ± 7.01
Total Y-BOCS	14.7 ± 13.3

PANSS: Positive and Negative Symptoms Scale; SOFAS: Social and Occupational Functioning Assessment Scale; SC-LF: Strauss-Carpenter Level of Functioning scale; Y-BOCS: Yale-Brown Obsessive–Compulsive Scale.

Table 2
Pearson correlation among symptoms in patients with schizophrenia.

PANSS scores		Y-BOCS scores		
		Obsessions	Compulsions	Total
Positive	ρ	0.003	0.11	0.06
	p	0.97	0.38	0.63
Negative	ρ	0.11	0.004	0.05
	p	0.40	0.97	0.66
General Psychopathology	ρ	0.35	0.31	0.36
	p	0.005	0.013	0.005
Disorganization	ρ	−0.01	0.10	0.05
	p	0.90	0.41	0.68
Total	ρ	0.26	0.24	0.27
	p	0.03	0.03	0.03

Table 3
Effect of symptoms on level of functionality (SOFAS score) in patients with schizophrenia.

Social and Occupational Functioning Assessment Scale				
	R^2	β	t	p
STEP 1	0.29			
PANSS positive scale		−0.53	−4.8	< 0.001
STEP 2	0.39	–		
PANSS positive scale		−0.50	−4.9	< 0.001
PANSS negative scale		−0.33	−3.2	0.003
STEP 3	0.46			
PANSS positive scale		−0.49	−0.9	< 0.001
PANSS negative scale		−0.31	−3.2	0.002
Total YBOCS		−0.24	−2.5	0.01

Independent variables entered in the analysis were: age, gender, age at onset, illness duration, Y BOCS and PANSS score. PANSS general psychopathological score did not enter since its high correlation with Y-BOCS scores.

Table 4
Effect of symptoms on level of functionality (SC-LF score) in patients with schizophrenia.

Strauss Carpenter- Level of Functioning score				
	R^2	β	t	p
Step 1	0.16			
PANSS positive scale	–	−0.40	−3.4	0.001
Step 2	0.26			
PANSS positive scale	–	−0.37	−3.3	0.002
PANSS negative scale	–	−0.30	−2.681	0.01
Step 3	0.33			
PANSS positive scale	–	−0.36	−3.3	0.002
PANSS negative scale	–	−0.29	−2.6	0.01
Total Y-BOCS	–	−0.27	−2.4	0.01

Independent variables entered in the analysis were: age, gender, age at onset, illness duration, Y-BOCS and PANSS score, except for PANSS general psychopathological score did not enter since its was highly correlated with Y-BOCS scores.

negatively related to PANSS positive and negative scores and to Y-BOCS total score. When Y-BOCS total score was collapsed into subtotal obsessions and compulsions scores, an inverse relationship was maintained only between functioning and compulsions.

3.4. Drug treatment

All patients were treated with antipsychotics. Patients who had moderate–severe OC symptoms (Y-BOCS score higher than 15) ($N=26$) also received a serotonergic drug.

Fifty-five patients (91.7%) were treated with oral antipsychotics and the remaining 5 patients (8.3%) received a long-acting antipsychotic. Twenty-one patients (35%) were receiving a first generation antipsychotic (FGA) and 39 (65%) a second generation antipsychotic (SGA). Five patients (8.3%) were treated with clozapine. The mean chlorpromazine equivalent dose was 432 ± 121 mg/day.

4. Discussion

To our knowledge this is the first study adopting a dimensional approach to investigate the effect of OCS on both symptom expression and social functioning in schizophrenia.

In line with previous data (Byerly et al., 2005), the present research showed that OCS were not related with positive and disorganization symptoms, thus suggesting that OCS exert neither a worsening (Öngür and Goff, 2005; Cunill et al., 2009; Tiryaki and Ozkorumak, 2010) nor a mitigating effect (Poyurovsky et al., 1999) on positive and disorganization symptoms severity.

Further, our data failed to replicate the results by Guillem et al. (2009) who found a strong positive relationship between obsessions and delusions and between hallucinations and compulsions. We speculate that the lack of association between obsessive dimension and psychotic symptoms is explained by the narrow definition of OCS adopted in the present study which implied strictly egodystonic features (i.e. typical OCS with insight and not related to positive symptoms). In fact broader defined OCS might result less distinguishable from delusions.

In contrast with previous studies (Tibbo et al., 2000; Lysaker et al., 2000; Hwang et al., 2000; Cunill et al., 2009) we were unable to find a relationship between OCS and negative symptoms; this finding may be explained by the different methodological approaches (dimensional vs categorical) used and by the different stage of illness at the assessment (long lasting illness vs early or later phases of illness) (Poyurovsky et al., 1999; Lysaker et al., 2000; Hwang et al., 2000). The high correlation found between OCS and the PANSS general psychopathological symptoms may be due to the fact that this dimension represents a heterogeneous construct, including symptoms, such as anxiety and agitation, probably secondary to other dimensions. In the present study, OCS, that “cause marked anxiety or distress” (American Psychiatric Association, 2000), might increase PANSS general psychopathological score, thus explaining the high correlation found between them.

Taken together, the present results suggest a lack of association between OCS and psychotic severity. This is in line with recent literature which views schizophrenia as a heterogeneous and complex syndrome constituted by relatively distinct psychopathological dimensions (Keshavan et al., 2008; Tandon, et al., 2009). The significant overlap in structures involved in both disorders (in particular shared cortical–subcortical pathways) may explain the frequent co-occurrence of OC and schizophrenia symptoms (Bottas et al., 2005; Tonna et al., in press). As for the level of functionality, our results show a negative effect of OC phenomena on social functioning, since both SOFAS and SC-LFRS

scores were inversely related to the Y-BOCS scores. This adverse impact was still present after controlling for the severity of positive, disorganization and negative symptoms (together with age, gender, age at onset and illness duration). Therefore, present data do not support the hypothesis of a protective role of OCS on functional decline in schizophrenia, as suggested by early investigators (Stengel, 1945; Rosen, 1957).

In line with more recent studies (Hwang and Opler, 2009; Poyurovsky et al., 2012; de Haan et al., 2013a, 2013b), the present results suggest that OCS, independently from psychotic and negative symptoms, contribute to functional impairment during the course of illness, confirming their poor prognostic significance. These conflicting results might be explained by a phase-dependent effect of OC dimension on functional level, with OCS/OCD conferring greater impairment in chronic schizophrenia and a protective effect in early stages (Bottas et al., 2005). Otherwise, as more recently suggested (Üçok et al., 2011; de Haan et al., 2013a, 2013b), OCS and OCD might have a different impact on functioning in schizophrenia, with a mitigating and a worsening effect respectively. Nevertheless, as a distinct psychopathological dimension, OC phenomena in schizophrenia result associated to a worse impairment in social functioning and quality of life, consistently with the findings of most recent studies (Lysaker and Whitney, 2009; Tiryaki and Ozkorumak, 2010; de Haan et al., 2013a, 2013b; Üçok et al., 2014).

Interestingly, our results indicate a major impact of compulsions rather than obsessions on the level of functionality. This finding may be partially explained by the use of SOFAS and SCL-FS since they mostly investigate behavioral domains of functioning.

The finding that OCS in schizophrenia adversely impact on functioning and have a poor prognostic significance support the view of recognizing OCS as a clinical important symptom cluster in schizophrenia (Tonna et al., 2015). Future research is needed to elucidate if OCS schizophrenia comorbidity may represent a specific subtype of schizophrenia.

Our study presents the following limitations: first, the cross-sectional design of the study cannot exclude that OCS may fluctuate during the course of the disease with the relationship between OCS and other schizophrenic symptoms or functioning changing over time. Second, since cognitive symptoms were not evaluated in the present study, the effect of obsessive dimension on functioning might not be controlled for the effect of cognitive dysfunction. Therefore, our results should be confirmed taking into account the effect of cognitive dimension.

5. Conclusions

In conclusion, OC, psychotic and negative symptoms appear to be independent dimensions that separately influence the level of functioning in patients with schizophrenia.

Furthermore, in schizophrenia OC dimension should be carefully investigated due to its important prognostic implications on functional impairment.

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