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Emotional perception and theory of mind in first episode psychosis: The role of obsessive–compulsive symptomatology

Evangelos Ntouros [a], Vasilios P. Bozikas [b,*], Christina Andreou [c], Dimitris Kourbetis [a], Grigoris Lavrentiadis [d], George Garyfallos [d]

[a] Psychiatric Clinic of 424 Military Hospital of Thessaloniki, Greece
[b] 1st Department of Psychiatry, Aristotle University of Thessaloniki, General Hospital "Papageorgiou", Ring Road Thessaloniki, N. Efkarpia, 54603 Thessaloniki, Greece
[c] Department of Psychiatry and Psychotherapy, University Medical Center Hamburg-Eppendorf, Hamburg, Germany
[d] 2nd Department of Psychiatry, Aristotle University of Thessaloniki, Thessaloniki, Greece

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ABSTRACT

The aim of the present study was to investigate the effects of comorbid obsessive–compulsive symptoms on emotional perception and theory of mind (ToM) in patients with first-episode psychosis. Participants were 65 patients with non-affective first episode psychosis (FEP) and 47 healthy controls. The patient group was divided into two subgroups, those with (FEP+; $n=38$) and those without obsessive–compulsive symptomatology (FEP−; $n=27$). Emotion perception and ToM were assessed with the Perception of Social Inference Test. Severity of psychotic and obsessive–compulsive symptoms was assessed with the Positive and Negative Syndrome Scale (PANSS) and the Yale-Brown Obsessive–Compulsive Scale (Y-BOCS), respectively. Deficits in emotion recognition and theory of mind were confirmed in patients with non-affective first-episode psychosis compared to healthy controls. In patients, comorbidity with obsessive–compulsive symptoms was associated with worse performance on certain aspects of social cognition (ToM 2nd order) compared to FEP− patients. Our findings of impaired emotion perception and ToM in patients with first-episode psychosis support the hypothesis that deficits are already present at illness onset. Presence of OCS appears to have further deleterious effects on social cognition, suggesting that these patients may belong to a schizo-obsessive subtype of schizophrenia characterized by more extensive neurobiological impairment.

1. Introduction

With a prevalence rate of up to 64% (Buckley et al., 2009), obsessive–compulsive symptoms (OCS) are a very common comorbidity in patients with schizophrenia, while the fully developed syndrome of obsessive–compulsive disorder (OCD) occurs in approximately one in eight patients (7.0–17.1%), (Achim et al., 2011). Prevalence rates of OCS and OCD in patients with first-episode psychosis (FEP) are similarly high (Poyurovsky et al., 1999; De Haan et al., 2013), suggesting that these symptoms are already present at illness onset. As these figures clearly diverge from the established prevalence of OCD in the community which does not exceed 1.5–3%, (Fullana et al., 2009), there has been growing interest into the causes and implications of this comorbidity, especially in the past two decades.

In general, schizophrenia with comorbid OCD or OCS is associated with more severe psychopathology and functional deficits (Devulapalli et al., 2008). Previous studies have associated obsessive–compulsive comorbidity in schizophrenia with increased symptom severity (Cunill et al., 2009). Moreover, the symptomatic and functional outcome of this subgroup of patients is significantly poorer, with more hospitalizations and functional impairment (Hwang et al., 2000), as well as more frequent suicide attempts (Sevincok et al., 2007). Regarding basic neuropsychological functions, findings are more disparate. However, here too, patients with OCS/OCD appear to exhibit greater impairments than those without, especially with regard to abstraction ability and executive functioning (for a recent review, see Lysaker and Whitney (2009)).

A cognitive domain that has so far remained, to the best of our knowledge, relatively unexplored in first episode psychosis patients is the effect of OCS/OCD in social cognition. Only one study explored the role of obsessive–compulsive symptomatology in social cognition in chronic patients with schizophrenia (Whitton and Henry, 2013). The term social cognition refers to a variety of mental processes associated with the perception, interpretation and

* Corresponding author. Tel.: +30 2313323151; fax: +30 2310991577.
E-mail address: vbozikas@med.auth.gr (V.P. Bozikas).

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response to stimuli pertinent to social interaction (Green et al., 2008; Bell et al., 2010; Chung et al., 2010). In patients with schizophrenia, there is significant evidence that various aspects of social cognition are impaired (Green et al., 2008), the most extensively investigated ones being theory of mind (ToM), i.e. the capacity to infer intentions, dispositions and beliefs of others (Biedermann et al., 2012), and affect perception, i.e. the ability to accurately perceive, interpret and process emotional facial expressions or prosody (Adolphs et al., 2002). Impairments in these functions are a very prominent and consistent finding in patients with schizophrenia (Edwards et al., 2002; Brune, 2005; Harrington et al., 2005; Sprong et al., 2007; Bora et al., 2009; Kohler et al., 2010; Savla et al., 2013). Social cognitive impairments are already present before the onset of the illness (Dworkin et al., 1993; Davidson et al., 1999; Schiffman et al., 2004; Addington et al., 2008; Gibson et al., 2010), and are stable over time (Addington et al., 2006; Penn et al., 2008; Green et al., 2012), independent of clinical fluctuations (Addington and Addington, 2008) and pharmacological treatment (Mueser et al., 1996; Salem et al., 1996; Wolwer et al., 1996; Addington et al., 2008; Hempel et al., 2010; Kohler et al., 2010). They are also present in unaffected relatives of patients with schizophrenia and individuals at ultra-high risk for psychosis (Bora and Pantelis, 2013) and thus appear to constitute a trait marker of the illness. Importantly, several aspects of social cognition have shown a robust association with the functional outcome of schizophrenia (Couture et al., 2006; Bell et al., 2009).

According to the above findings, it appears undeniable that social cognition is of paramount significance in early schizophrenia. The aim of the present study was to investigate the association of OCS/OCD with social cognition in patients with a first episode of a schizophrenia spectrum psychosis. Based on previous findings, we formed two hypotheses: (a) social cognition deficits are present at the time of illness onset for all patients; and (b) the presence of OCS/OCD symptoms would aggravate these deficits. Our second hypothesis is mainly based on the results of studies showing that obsessive–compulsive symptomatology contributes to poorer non-social cognitive function and that non-social cognitive function is closely related to social cognition (Lysaker and Whitney, 2009).

2. Method

2.1. Participants

We recruited 65 patients with non-affective first episode psychosis (FEP), (52 men and 13 women) and 47 healthy controls (HC), (31 men and 16 women). The patient group was divided into two subgroups, those with (FEP+; $n=38$; 28 men and 10 women) and those without obsessive–compulsive symptomatology (FEP−; $n=27$; 24 men and 3 women). Patients were recruited from two psychiatric clinics (424 Army General Hospital and 2nd Psychiatric Clinic, Aristotle University) while healthy controls were recruited from the community through word-of-mouth. The study was approved by the Ethics Committee of the Aristotle University of Thessaloniki, and written informed consent was obtained from all participants.

All patients met DSM-IV criteria for Schizophrenia and other Psychotic Disorders (American Psychiatric Association, 1994). Diagnosis was confirmed with the Greek version (translation–adaptation to the Greek language by S. Beratis) of the Mini-International Neuropsychiatric Interview (4.4) (MINI) (Sheehan et al., 1998). Obsessive–compulsive symptomatology was evaluated with the Yale-Brown Obsessive–Compulsive Scale (Y-BOCS), (Goodman et al., 1989). Patients with a score of zero on the Y-BOCS were included in the FEP− group, while all other patients composed the FEP+ group following a dimensional perspective also used in most of relevant studies (Niendam et al., 2009; Meijer et al., 2013). The latter group included six patients who fulfilled DSM-IV criteria for a comorbid diagnosis of OCD; due to the small number of these patients, no further analysis was conducted on these patients as a separate subgroup. Patients were assessed after clinical stabilization, shortly before or shortly after discharge.

Exclusion criteria were the following: non-native speakers of the Greek language, a history of neurological or developmental disorders, substance abuse in the past 6 months prior to participation in the study, as well as any co-morbid medical disorder which might compromise cognitive performance. In healthy controls, additional exclusion criteria were a history of any axis I mental disorder, treatment with any psychiatric medication and the presence of a first-degree relative diagnosed with psychosis. Participants were screened for the presence of exclusion criteria by means of a semi-structured interview conducted by one of the authors.

Seventeen patients were diagnosed with schizophrenia, 11 with brief psychotic disorder, 27 with schizophreniform disorder and 10 with psychotic disorder not otherwise specified. All patients were receiving antipsychotic medication at the time of the study (atypical antipsychotic monotherapy $n=58$; typical antipsychotic monotherapy $n=3$; combination treatment with atypical and typical antipsychotics $n=1$; and combination of two atypical antipsychotics $n=3$). However, no patient had been in antipsychotic medication treatment for longer than 12 weeks at the time of assessment. Antipsychotic doses were converted to equivalent dosages of chlorpromazine (Woods, 2003). Anticholinergic agents were being administered to 12 patients and benzodiazepines to three patients. Finally, six patients were receiving antidepressants additionally to their antipsychotic medication.

2.2. Psychopathological assessment

We assessed symptom severity in patients with the Greek version (Lykouras et al., 1997) of the Positive and Negative Syndrome Scale (PANSS), (Kay et al., 1987). The assessment was conducted with use of the Greek version of the Structured Clinical Interview for the PANSS (Lykouras et al., 1997). Scores of positive, negative, cognitive, excitement and depressive symptoms according to the five-factor model of schizophrenia were calculated based on a Greek validation study of the PANSS (Lykouras et al., 2000).

2.3. Social cognition assessment

For the present study we used the Perception of Social Inference Test (PESIT), (Kosmidis et al., 2008), which was developed for the Greek population based on The Awareness of Social Inference Test (TASIT), (McDonald et al., 2003). The PESIT consists of three subtests: Facial Affect Recognition, Social Inference-Minimal (SI-M) and Social Inference-Enriched (SI-E).

The Facial Affect Recognition subtest assesses basic emotion perception. Stimuli are short videos of an actor who speaks out a sentence while expressing one of seven basic emotions: sadness, anger, happiness, disgust, surprise, fear, and neutral. The subtest comprises 21 videos (three for each emotion), which are presented in randomized order. One point is given for each correct response.

Stimuli for the SI-M and SI-E subtests are videotaped scenarios played by two actors. In the SI-M, participants view a series of 10 brief scenarios of social interaction. After presentation of each scenario, participants are asked to evaluate i) the speaker's emotional state among six complex emotions such as disappointment, satisfaction or rage (complex emotion perception), ii) the meaning of the speaker's remark and his/her beliefs (ToM 1st order question) and iii) the speakers belief about the message the listener got from his/her remark (ToM 2nd order question).

Example of SI-M scenario

Actor A: Have you asked the teacher everything you wanted?
Actor B: Yes, and he has explained me everything… (*expressed ironically*)

For each question, 0–2 points are administered according to the degree of proximity with the correct response (0=wrong, 1=partially correct and 2=correct). In the SI-E subtest, participants are requested to view four brief scenarios; comprehension is assessed by four questions, the first three identical to those of the SI-M, and an additional question concerning the intention of one of the two actors. The SI-E differs from the SI-M in that more cues (a prologue that reveals the actor's thoughts) are provided in addition to paralinguistic features.

Example of SI-E scenario

Actor A is speaking on the telephone with a friend of hers saying that she doesn't like the car that Actor B bought. She ends the conversation when Actor B enters the room. The following dialog takes place:
Actor B: So what do you think about my new car?
Actor A: I find it great, I can't wait to take a ride with it! (*expressed in a enthusiastic tone*)

The PESIT yields four subscores: (a) Basic Emotion Perception (BEP) consisting of the score on the Facial Affect Perception subtest (maximum score: 21); (b) Complex Emotion Perception (CEP), calculated as the sum of points on the first question in SI-M and SI-E (maximum score: 28); (c) 1st order ToM (ToM1), which consists in the sum of points on the second question in SI-M and SI-E (maximum score: 28); and (d) 2nd order ToM (ToM2), reflecting performance on the 3rd and 4th questions of the SI-M and SI-E (maximum score: 36).

The PESIT has a very high internal consistency for the total score (Cronbach's $\alpha=0.866$), and high for each of the four subscores ($\alpha=0.800$, 0.755, 0.762 and 0.807 for BEP, CEP, ToM 1st order and ToM 2nd order, respectively). Internal