Schizophrenia Research 165 (2015) 134–137

Contents lists available at ScienceDirect

Schizophrenia Research

journal homepage: www.elsevier.com/locate/schres

Differences in parental bonding between schizophrenia and bipolar disorder: Evidence of prodromal symptoms?

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ARTICLE INFO

Article history:
Received 10 December 2014
Received in revised form 25 March 2015
Accepted 26 March 2015
Available online 24 May 2015

Keywords:
Bipolar disorder
Schizophrenia
Parental bonding

ABSTRACT

Background: : The Parental Bonding Instrument (PBI) examines parent–child bonds and attachment during the first 16 years. Our study aims to compare PBI scores between patients with schizophrenia and bipolar disorder (BD).
Methods: : We analyzed PBI scores in 59 patients with schizophrenia, 36 with BD and 52 healthy controls using ANCOVA, with age, gender and years of education as covariates. Bonferroni correction was used to adjust for multiple comparisons. PBI has maternal and paternal scores, each one with two domains: care and overprotection.
Results: : In PBI maternal and paternal care domains, patients with schizophrenia showed significantly higher scores when compared with BD patients ($p < 0.001$). However, when compared with healthy controls, patients with schizophrenia only showed significantly higher scores of PBI maternal care domain ($p = 0.037$). BD patients showed significantly lower PBI care scores compared with healthy controls (maternal score: $p = 0.016$; paternal score: $p < 0.001$). In PBI maternal and paternal overprotection domain, BD patients showed significantly higher scores compared with patients with schizophrenia ($p = 0.004$; $p = 0.021$) and healthy controls ($p = 0.014$; $p = 0.008$); while no significant difference was observed between patients with schizophrenia and healthy controls. "*P* values" are according to Bonferroni correction.
Conclusion: : There are significant differences in the perception of attachment between schizophrenia and BD. This finding may shed some light to better understand the prodromal symptoms of each disorder.

1. Introduction

Bipolar disorder types I and II affect about 2% of the world's population, with subthreshold forms of the disorder affecting another 2% (Merikangas et al., 2007). Even with treatment, about 37% of patients relapse into depression or mania within 1 year, and 60% within 2 years (Gitlin et al., 1995). On the other hand, the prevalence of schizophrenia (SCZ) is estimated to be around 1% worldwide (Saha et al., 2005). SCZ follows a course characterized by prodromal symptoms in early adolescence, illness onset around 20s with several recurrence and exacerbations, resulting in chronic state of residual symptoms and functional impairment (Saha et al., 2005; Lieberman et al., 2013). Both disorders have been described as a life shortening condition (Hoang et al., 2011). Patients with a diagnosis of SCZ die 12–15 years before the average population while life expectancy has been reported to be decreased 9 years for patients with bipolar disorder (BD) (Saha et al., 2007; Crump et al., 2013). Given these findings, a thorough understanding of the early course of these diseases is important for timely accurate diagnosis and therapeutic intervention, as well as for the prevention of substantial burden of illness progression (Post and Kalivas, 2013; Carlborg et al., 2014), comorbidities (Young, 2009; Kredentser et al., 2014) and suicide attempts (Saha et al., 2007; Ishii et al., 2014).

Many patients with BD and SCZ are initially misdiagnosed especially in the early stages of both disorders (Young, 2009). The diagnostic difficulties between them are common (Vieta, 2010). The consequences of misdiagnosis can include worsening of manic or depression symptoms, increased drug resistance, reduced quality of life, and increased risk of suicide (Young, 2009). Early detection and appropriate differential diagnosis has potentially great benefits for prognosis and specific treatments preventing functional impairment (Hill et al., 2013).

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http://dx.doi.org/10.1016/j.schres.2015.03.032
0920-9964/

The relationships with parents during childhood seem to have an important role in the children's psychosocial development (Ramchandani and Psychogiou, 2009) and could directly influence the ability to overcome a traumatic situation (Sagi-Schwartz et al., 2003; Lima et al., 2014). The study of parental bonding and its particularities in patients with SCZ and BD may shed some light to clarify the prodromal symptoms of each disorder, and helps in early differential diagnosis. Disturbances in this relationship have been associated with increased risk for a number of mental disorders and neurobiological dysfunctions (Enns et al., 2002; Klier and Muzik, 2004; Tyrka et al., 2008). For instance, low maternal warmth is one of the leading risk factors associated with the risk of mania relapse after recovery in child BD subjects (Geller et al., 2008, 2004).

Parental bonding characterizes a two-way process in which the child becomes emotionally attached to parents (Bowlby, 1977). The Parental Bonding Instrument (PBI) was developed to investigate parental behavior and healthy parent–child bonds during the first 16 years (Parker, 1979). PBI has two dimensions: care and overprotection (Parker, 1979). Previous PBI studies revealed that patients with several psychiatric disorders, such as major depressive disorder and obsessive compulsive disorder, are likely to have a low parental care score or a high overprotection score for the first 16 years (Narita et al., 2000; Wilcox et al., 2008; Willinger et al., 2002).

Our study aims to compare the parental bonding features among three groups: patients with BD and SCZ, and healthy controls. Our hypothesis is that there may be a difference in the quality of the bond between these two disorders, given the opposite clinical feature of BD and SCZ regarding affect modulation, which might be crucial for attachment and bonding development. This is the first study to perform such comparison.

2. Method

2.1. Subjects

Fifty-nine patients with SCZ, thirty-six patients with BD and fifty-two healthy controls were enrolled in this study. The inclusion criteria for the patients were the following: diagnosis of BD or SCZ according to the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-1); to be literate; and to be euthymic if it was a BD patient, or out of the psychotic episode if it was a SCZ patient. The exclusion criteria were a) parentless patients; b) genetic, neurologic or autoimmune diseases; c) liver or kidney insufficiency; d) intellectual disabilities; and e) current substance use disorder.

Participants were included from the outpatient clinic of Hospital de Clinicas de Porto Alegre (HCPA). Subjects were invited to participate after an initial contact by phone. The healthy controls have no psychiatric disorder and no first degree relative with psychiatric disorders. They were included from the blood donor center of HCPA.

All the subjects provided their written informed consent. Ethics Committee of HCPA approved the study protocol.

2.2. Measurements

We have performed a questionnaire that consisted of demographic data, such as occupation and education, as well as data related to medical history, age at onset of first episode, duration of euthymia, prior suicide attempts, substance use, comorbidities and current medications.

We also used the PBI to measure parental bonding features. PBI is a self-report scale with 25 items, derived from the factor analysis of 114 items drawn from the literature on parental qualities for adequate childhood and adolescent development (Parker et al., 1979). It is designed to assess paternal or maternal behavior during the first 16 years of patients' childhood. Patients filled maternal and paternal forms separately. PBI assesses two factors: "care" and "overprotection" (Parker, 1979). Four scores of PBI, i.e., paternal care and overprotection, and maternal care and overprotection scores, were used in this study. The "care" factor has one pole defined by care and involvement and the other defined by indifference and rejection. The "overprotection" factor has one pole defined by control, overprotection, and intrusion and the other defined by encouragement of independence and autonomy. The final score indicates which category of parental attachment the relationship should be classified: "optimal parenting" (high care and low protection), "affectionate constraint" (high care and high protection), "affectionless control" (high protection and low care), and "neglectful parenting (low care and low protection)" (Parker et al., 1979). Assignment to "high" or "low" categories is based on the following cut-off scores: for maternal form, a care score of 27.0 and a protection score of 13.5; for paternal form, a care score of 24.0 and a protection score of 12.5 (Parker et al., 1979).

We used the Brazilian Portuguese version of PBI (Hauck et al., 2006). The validity and reliability of the PBI have been shown to be acceptable, as well as have been shown to be stable over time (Mackinnon et al., 1989). Trained personnel performed all instruments.

2.3. Statistical analyses

Statistical analyses were conducted using the SPSS software (version 21). Descriptive analyses were performed on all demographic and clinical variables. Means, standard deviations and medians were computed for numeric variables, and absolute and relative frequencies were calculated for categorical variables. Conclusions and generalizations were based on inferential analysis of the data. Demographic variables were analyzed with chi-square and ANOVA as indicated in Table 1.

For each parent, the resulting PBI score for care and overprotection was compared using *general linear model* (one way ANCOVA). We considered $p < 0.05$ significant. Group (BD, SCZ or healthy controls) was entered as an independent variable, while PBI score was entered as a dependent outcome variable. We used age, gender and years of study as covariates to test if such variables can influence the outcome. The pairwise comparisons were performed with Bonferroni correction if the ANCOVA was significant. The mean difference is significant at the 0.05 level.

3. Results

Demographic variables and PBI mean scores are shown in Table 1. Variables, including gender, years of education, and age were significantly different among three groups.

3.1. PBI care

In the analysis of maternal score of PBI, one-way ANCOVA showed significant difference for the "care domain" according to the diagnostic

Table 1
Sociodemographic variables and PBI scores.

Variable	Schizophrenia	Bipolar disorder	Healthy controls	*p*
Age in years[a], mean (SD)	39.5 (10.5)	46.8 (9.9)	46.9 (12.5)	<0.001
Gender: % male[b]	76,3%	25%	32,7%	<0.001
Years of education,[a] mean (SD)	8.9 (2.7)	10.4 (3.8)	12.2 (4.9)	<0.001
PBI care score (maternal)[c]	28.03 (1.3)	18.06 (1.6)	23.49 (1.1)	<0.001
PBI care score (paternal)[c]	22.45 (1.4)	13.02 (1.7)	22.77 (1.3)	<0.001
PBI overprotection score (maternal)[c]	15.88 (1.2)	21.92 (1.4)	17.00 (1.0)	=0.003
PBI overprotection score (paternal)[c]	15.41 (1.1)	20.30 (1.4)	15.16 (1.0)	=0.006

[a] Anova.
[b] Chi-square.
[c] ANCOVA.