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Demographic and clinical characteristics associated with a history of bizarre delusions in a cross-diagnostic sample of individuals with psychotic disorders

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ABSTRACT

Bizarre delusions (BizD) are not specific to schizophrenia (SZ) and can be found in other psychotic disorders. However, to date, there are no studies investigating socio-demographic and clinical characteristics associated with BizD across the psychosis spectrum. In this study 819 subjects with a diagnosis of SZ (n = 250), schizoaffective disorder (SZA) (n = 228) and bipolar I disorder (BD) (n = 341) were included. Patients with history of BizD and with no BizD were compared with respect to socidemographic and clinical variables, and predictors of BizD were explored. Patients with BizD were less educated, less likely to be married, had higher Positive and Negative Syndrome Scale (PANSS) negative scores and lower Young Mania Rating Scale scores. Younger age, SZ and SZA diagnoses, higher PANSS positive scores, presence of reference delusions, tactile and olfactory hallucinations were predictors. Our results indicate that BizD are associated with higher illness severity, lower functionality and specific set of symptoms.

1. Introduction

The concept of bizarre delusions (BizD) originated from the writings of Kraepelin which described some delusions as 'showing an extraordinary, wholly nonsensical stamp' and of use in the differential diagnosis of "dementia praecox" (Spitzer et al., 1993). Later, following the same perspective, Jaspers differentiated 'true delusions' from 'delusion-like ideas' in terms of their incomprehensibility and specificity to schizophrenia (SZ). There is considerable overlap between these earlier conceptualizations of BizD and the 'first rank symptoms' (FRS) later described by Schneider since the latter are also characterized by a mixture of incomprehensibility and logical impossibility. Moreover, non-Schneiderian bizarre delusions (BizD without FRS) are rare both in SZ and in first episode psychosis patients (Nakaya et al., 2002; Tanenberg-Karant et al., 1995).

Despite the focus of the historical literature, BizDs are not specific to SZ. Lifetime occurrence of BizDs is reported with rates of 76–79% in SZ or SZ spectrum disorders (Goldman et al., 1992; Nakaya et al., 2002; Tanenberg-Karant et al., 1995), 32% in Bipolar Disorder (BD) and 20% in Major Depressive Disorder (MDD) (Tanenberg-Karant et al., 1995) and 43.5% in a group of patients with other psychotic disorders (Goldman et al., 1992). Similary, FRS are not limited to psychotic disorders (Peralta and Cuesta, 1999; Taylor and Abrams, 1973).

Due to this lack of diagnostic specificity, the special weight given to BizD for SZ diagnosis in earlier versions of DSM, has been removed in DSM-V (Tandon et al., 2013b). However, it is expected that the impact of this change on caseness from DSM-IV to DSM-V will be limited, as studies show that only a negligible portion of patients were diagnosed with DSM-IV SZ relying solely on BizD (Shinn et al., 2013; Tandon et al., 2013a).

Association of BizDs with clinical and demographic variables were examined in only three studies. In an earlier study schizophrenia patients with BizDs had more severe hallucinations and delusions, and had lower functioning at admission to the index hospitalization, however shorter hospital stays (Goldman et al., 1992). In line with this, another study found higher SAPS scores associated with FRS or BizDs in patients with schizophrenia but not BD (Tanenberg-Karant et al., 1995). Finally, in a more recent study schizophrenia patients with non-

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Schneiderian BizDs and Schneideiran BizDs had higher PANSS scores in all five domains (delusions/hallucinations, thought disorder/disorganization, excitement, negative symptoms, and depressive symptoms) and three domains (delusions/hallucinations, thought disorder/disorganization, depressive symptoms), respectively (Nakaya et al., 2002). There was no association with any demographic variable except a trend for more males in Tanenberg et al. study.

However, the literature regarding the predictive value of FRS for symptom severity and clinical outcome gave conflicting results with some studies finding no association (Abrams and Taylor, 1973; Hawk et al., 1975; Strauss and Carpenter, 1972), some reporting positive outcomes including shorter hospital stay (Thorup et al., 2007), fewer admissions and shorter length of illness (Mellor, 1970), finally others showing lower functionality before admission or in follow-up (Ramperti et al., 2010; Rosen et al., 2011; Silverstein and Harrow, 1981), poorer treatment response in the acute phase (Silverstein and Harrow, 1981; Taylor, 1972), increased number of depressive and anxiety symptoms (Preiser and Jeffrey, 1979), and persistent unusual thoughts and perceptions (Endicott et al., 1986). FRS was not associated with any demographic variables in schizophrenia patients (Carpenter et al., 1973; Mellor, 1970; Ramperti et al., 2010; Thorup et al., 2007) but one study found higher rate associated with male gender and younger age in BD patients (Gonzalez-Pinto et al., 2003). However, it should be noted that these studies included hallucinations in addition to delusions.

To the best of our knowledge, there are no studies investigating the sociodemographic and clinical features associated with BizD across psychotic disorders. In this study we examined these characteristics in patients diagnosed with SZ, schizoaffective disorder (SZA) and BD. We predicted that BizD would be a marker of more severe disease regardless of diagnosis as suggested by previous studies (Goldman et al., 1992; Nakaya et al., 2002; Tanenberg-Karant et al., 1995), and also that specific symptoms related to the disruption of self-world boundaries inherent in Schneiderian delusions (Carpenter et al., 1973) would be associated with the experience of BizD.

2. Methods

Subjects were recruited for an ongoing genetic study of mood and psychotic disorders at Mclean Hospital, through the screening of consecutive patients admitted to both inpatient units and outpatient clinics of the Psychotic Disorders Division over a 5-year period. 819 subjects with a diagnosis of SZ (n = 250), SZA (n = 228) and BD-I (n = 341), each of whom had at least one lifetime delusion, currently or by history, were included in this study. Exclusion criteria were having an additional diagnosis of developmental disorder and/or significant neurologic illness. All participants provided informed consent, and the study was approved by the McLean Hospital Institutional Review Board.

Program research staff trained to a high level of consensus, including research assistants, licensed psychologists, and attending psychiatrists, conducted the diagnostic and clinical assessments. The Structured Clinical Interview for DSM-IV-TR (SCID I for DSM-IV-TR) modules A–F were used to diagnose mood, psychotic, substance use and anxiety disorders. The SCID evaluation was based on all available information, including hospital records and, with patient consent, information from family and outpatient treaters. The SCID does not systematically evaluate history of suicide attempts and electroconvulsive therapy (ECT); therefore, questions probing these were added. The assessments also included the Positive and Negative Syndrome Scale (PANSS), the Young Mania Rating Scale (YMRS), and the Montgomery-Asberg Depression Rating Scale (MADRS).

SCID items, including lifetime bizarre delusions, were categorized as absent ('absent' and 'subthreshold' symptoms) or present ('threshold' symptoms). Data were collapsed across categories when appropriate to avoid low cell counts and anxiety disorders were considered collectively because of the low prevalence of individual disorders. Multiple imputation using fully conditional specification (ten imputed datasets, 100 iterations), as implemented in SPSS, was used to accommodate missing data and all statistical tests were performed on the imputed data.

Table 1
Comparison of sociodemographic and clinical variables between groups.

Total, n = 819[a]		BizD (n = 416)	No-BizD (n = 391)	*P*
Age (years)		35.6 (12.3)	37.3 (13.3)	0.156
Gender (% female)		40.1%	44.3%	0.439
Education[b]		4.5 (1.6)	4.7 (1.6)	**0.018**
Marital Status	Married	8.1%	15.6%	**0.002**
	Separated/ divorced	17.8%	15.9%	0.898
	Never married	74.1%	68.5%	Ref
Age of onset		21.8 (7.4)	21.8 (8.0)	0.973
Disease duration (years)		14.69	16.01	0.240
Diagnosis	SZ	39.9.%	20.2%	< **0.001**
	SZA	35.8%	19.2%	< **0.001**
	BD	24.3%	60.6%	Ref
PANSS-positive		21.1 (6.8)	20.3 (7.4)	0.132
PANSS-negative		15.6 (7.0)	12.9 (6.9)	< **0.001**
PANSS-general		35.3 (10.6)	36.3 (52.0)	0.651
YMRS		15.9 (10.1)	21.4 (13.6)	< **0.001**
MADRS		186.7 (11.2)	15.6 (9.6)	0.151
History of Suicide attempts		41.0%	34.9%	0.051

$p < 0.05$ is marked in bold.

[a] Information on the history of bizarre delusions was missing for 12 patients.

[b] Note that education is coded based on the SCID Education and Work History scale: 1 = grade 6 or less; 2 = grade 7–12 (without graduating); 3 = high school grad or equivalent; 4 = part college; 5 = graduated 2 year college; 6 = graduated 4 year college; 7 = part graduate/professional school; 8 = completed graduate/professional school. Ref: Reference variable.

Sociodemographic characteristics between cohorts of participants with and without lifetime bizarre delusions were compared using *t*-tests for continuous variables and univariable logistic regression for categorical variables (Table 1). Logistic regression also tested for univariable and multivariable associations of candidate predictors with probability of bizarre delusions. Significance of predictors with univariable p-values < 0.20 was assessed in multivariable models. Due to the lack of a simple and principled method for calculating the significance of categorical predictors with three levels using the imputed data, and the minimal impact of relying on univariate hypothesis testing on our analysis, we calculated univariate p-values for these predictors (diagnosis and marital status) and retained them in multivariable models if any pairwise difference between levels met the significance threshold. The candidate predictors considered were age, gender, marital status, level of education, primary diagnosis, age of onset, YMRS total score, PANSS positive, negative and general subscale scores, MADRS total score; presence of threshold psychotic symptoms including delusions (persecutory, reference, grandiose, somatic, religious, guilt, erotomanic), hallucinations (auditory, visual, tactile, olfactory), negative symptoms (avolition, alogia, affective flattening), disorganization symptoms (disorganized behavior, disorganized speech); history of suicide attempts; lifetime history of anxiety disorders (panic disorder, agoraphobia, generalized anxiety disorder, post-traumatic stress disorder, obsessive compulsive disorder, social anxiety disorder, specific phobia, anxiety disorder NOS); lifetime history of alcohol abuse or dependency and substance abuse or dependency. Variables missing for more than 30% of participants, (ECT treatment) and predictors with frequencies less than 10% (individual catatonic symptoms, inappropriate affect, gustatory hallucinations and jealousy delusions) were excluded from analysis. Missing values ranged from 0% to 8.4% (for disorganized behavior). To avoid collinearity, duration of illness was also excluded because of its high (0.8) correlation with age. Threshold for statistical significance was set at $p < 0.05$ for *t*-tests, individual and the final regression analysis. All statistical analyses were performed using SPSS version 20 (SPSS, Chicago, IL).