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Psychopathology in the Children of Parents with Bipolar Mood Disorder

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Abstract

Objective: *The aims of this study were to determine the rate of psychopathology in the children of parents with bipolar disorder and to examine the relationship between the psychopathology in these children and the characteristics of bipolar disorder in their parents.*

Method: *The study included 36 children of 28 bipolar I parents and 33 children of 28 control parents, all between the ages of 6 and 17 years. The bipolar parents and all of the children were screened using the Schedule for Affective Disorders and Schizophrenia-Lifetime Version (SADS-L) and the Schedule for Affective Disorders and Schizophrenia for School Aged Children, Present and Lifetime Version (K-SADS-PL), respectively. The spouses of bipolar parents completed the Symptom Checklist-90-Revised (SCL-90-R) and the children completed the Parenting Style Scale (PSS).*

Results: *The rate of psychopathology was higher in the children of bipolar parents than in those of the control parents. Affective disorders and disruptive behavior disorders were observed with significantly greater frequency in the children of the bipolar parents. Attitudes in study group parents were related to the presence of psychopathology in their children.*

Conclusion: *The results of this study suggest that children of bipolar parents have an increased risk of developing psychiatric disorders, especially affective disorders and disruptive behavior disorders. The children of bipolar patients need to be screened for psychiatric symptoms and referred for psychiatric assistance when necessary.*

Key Words: *Bipolar disorder, child of impaired parents, psychopathology*

INTRODUCTION

In recent years, understanding the warning signs and risk factors of psychiatric disorders has gained importance so that preventive measures specific to a disorder can be taken and early diagnosis can be made. Bipolar disorder has a high prevalence rate, as well as high rates of mortality and morbidity (Bauer and Pfennig, 2005). Researchers have determined strong genetic influences in the physiopathology of bipolar mood disorder (Merikangas et al., 1988) and that some adult bipolar patients experience onset of the disorder in childhood and adolescence (Lish et al., 1994), suggesting that children of parents with bipolar mood disorder might be at risk of developing that disorder.

To date, studies that have examined the psychopathology and psychosocial development of the children of bipolar parents do not support each other. Most studies report high rates of internalizing disorders, such as mood and anxiety disorders, and externalizing disorders, such as oppositional defiant disorder (ODD), conduct disorder (CD), and attention deficit-hyperactivity disorder (ADHD), as well as drug dependency (Carlson and Weintraub, 1993; Chang et al., 2000; Decina et al., 1983; Gershon et al., 1985; Grigoroiu-Serbanescu et al., 1989; Henin et al., 2005; LaRoche et al., 1987; Radke-Yarrow et al., 1992; Zahn-Waxler et al., 1988). Literature reviews highlight that these children frequently have mood disorders and other pathologies (Chang et al., 2003; DelBello and Geller, 2001); however, some studies have not reported an increase in the rate of psychopathology in these children (Anderson and Hammen 1993; Kashani et al., 1985; LaRoche et al., 1981; Wals et al., 2001). Variations among the findings might be

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related to differences between bipolar mood disorders in parents and control groups, failing to consider the psychiatric condition of the spouses, and the use of different methodologies (Duffy et al., 2002; Wals et al., 2001). Additionally, there are no studies that examined and compared children from different cultures and races. Replicating such studies in various countries and cultures will improve the generalization of the findings.

The present study aimed to identify the frequency of psychiatric disorders in the children of parents with bipolar I disorder and not any other psychiatric disorder, and to study the relationship between the presence of psychiatric disorders in the children and the characteristics of bipolar mood disorder in the parents.

METHOD

Participants

The study group included 36 children of 28 mothers or fathers who have been followed-up for bipolar I disorder and the control group included 33 children of 28 parents who did not have a psychiatric disorder. The study was conducted between June 2002 and October 2003. Inclusion criteria for the parents in the study group were: receiving follow-up care for bipolar I disorder at the Hacettepe University Psychiatry Clinic; not having a comorbid psychiatric diagnosis; having a child or children between the ages 6 and 17 years; willingness to participate in the study with their child/children. First, 27 patients whose bipolar I disorder diagnoses were verified by the Schedule for Affective Disorders and Schizophrenia-Lifetime Version (SADS-L) (Endicott and Spitzer, 1978) were phoned and informed about the aims and procedures of the study because these patients had been included in other studies conducted at the clinic. In all, only 18 of these patients were included in the study, as 6 were not willing to participate, 2 did not have children of proper age for this study, and 1 did not come to the scheduled appointment. SADS-L was also administered to the remaining 11 mothers or fathers who were followed-up for bipolar mood disorder. One of these parents was not included in the study because of comorbid panic disorder. Validity and reliability studies of the Turkish version of SADS-L were conducted in Turkey (Saka et al., 1998, Uluşahin et al., 2000). All mothers and fathers were euthymic during their interviews.

The control group included children who applied to the pediatric outpatient clinic with physical complaints and whose parents were matched with those in the study group in terms of age and level of education, as well as children of hospital staff who were willing to participate in the study. There were no differences between the children in the 2 groups in terms of gender, mean age, number of working mothers, family structure, and monthly income (Table I). For the control group, past or current psychiatric disorders in the parents and the parents' inability to attend the interview together with their child/children were exclusion criteria. In all, 5 of the available 37 families were excluded because the mother and father could not come to their interview together, and 2 other families did not come to the interview. SADS-L was administered to the remaining 30 families and 2 families were excluded because 1 mother had panic disorder and 1 father had major depression. Verbal consent was obtained from all the parents and children who participated in the study.

MATERIALS

Sociodemographic characteristics of the families, developmental and medical history of the children, bipolar mood disorder history in primary and secondary relatives of the parents, and characteristics related to bipolar mood disorder in the mother or father were gathered with a data collection form prepared by the researchers. We attempted to gather bipolar mood disorder histories of the relatives by inquiring about complaints, hospitalizations, treatments, and diagnoses of these patients.

Psychiatric Diagnoses in Children

The Schedule for Affective Disorders and Schizophrenia for School Aged Children, Present and Lifetime Version (K-SADS-PL, Kaufman et al., 1997) was administered to all the children by the first researcher. Reliability and validity studies of the Turkish version of the scale were conducted by Gökler et al. (2004). K-SADS-PL is a semi-structured interview used to identify current and lifetime psychopathology in children and adolescents. K-SADS-PL was administered while taking DSM-IV criteria into consideration (American Psychiatric Association, 1994). The scale has 3 sections. In the first, general information, such as the child's demographic characteristics, general state of health, previous psychiatric presentations and treatment if any, family and peer relationships, and information about school are gathered. The second section includes screening questions and assessment criteria that examine specific psychiatric symptoms. If there are positive symptoms assessed in the screening interview, a supplemental symptom list is used in order to assess the psychopathology in detail. The presence and severity of symptoms are determined through combining the

Table I. Demographic characteristics of the children in study and control groups.

Characteristics	Study Group n (%)	Control Group n (%)	Statistics
Gender			
Female	16 (44.4)	15 (45.4)	$\chi^2 = 0.007^{NS}$
Male	20 (55.6)	18 (54.6)	
Bipolar parent			
Father	11 (39.3)		$\chi^2 = 1.296^{NS}$
Mother	17 (60.7)		
Nuclear family	23 (82)	27 (96)	$\chi^2 = 3.231^{NS}$
Working mother	14 (50)	14 (50)	$\chi^2 = 0.089^{NS}$
	Mean (SD)	Mean (SD)	
Age (years)	12.7 (3.06)	12 (2.9)	$t = 0.938^{NS}$
Mother's age (years)	39.1 (5.4)	37.3 (4.9)	$t = 1.444^{NS}$
Father's age (years)	43.6 (4.7)	42 (6.6)	$t = 1.110^{NS}$
Parents' level of education			
Mother (years)	9.1 (4)	9.09 (4.32)	$t = -0.008^{NS}$
Father (years)	11.4 (2.8)	11.1 (3.3)	$t = 0.407^{NS}$
Monthly income (Turkish lira)	594.1 (349.6)	684.4 (473.3)	$t = -0.902^{NS}$

NS: Not Significant, P > 0.05.

child's, parents', and clinician's reports. Mood disorders, psychotic disorders, anxiety disorders, eliminating disorders, disruptive behavior disorders, substance abuse, eating disorders, and tic disorders can be assessed with K-SADS-PL. The third section is the global assessment scale, which is used to assess the child's level of functioning at the time of assessment. At least 1 parent that can provide information about the child must participate in the interview.

Psychiatric Symptom Level in Spouse of Bipolar Parent

The Symptom Check List-90-Revised (SCL-90-R) (Derogatis, 1977) was used to screen for the presence of psychiatric symptoms in the spouses of parents with bipolar mood disorder. SCL-90-R is a self-report inventory composed of 90 items, each of which is rated on a 5-point Likert scale. The global severity index (GSI), positive symptom total (PST), and positive symptom distress index (PSDI) are derived from the scale. In total, 21 (75%) spouses of the parents with bipolar I disorder participated in the interview and completed SCL-90-R.

Parental Attitude Towards Children

The Parenting Style Scale (PSS, Lamborn et al., 1991) was used to assess the differences between children, in terms of their perceptions of their parents' attitudes. The inventory is completed by children and adolescents older than 10 years of age and has 3 subscales: acceptance/involvement, strictness/supervision, and psychological autonomy. The reliability and validity study of the Turkish version was conducted by Yilmaz (2000). In all, 4 children in the study group and 2 in the control group did not complete the inventory because they were younger than 10 years of age.

Statistical Analysis

Statistical analyses of the data were conducted by t-test if the assumptions of the parametric tests were met and the Mann-Whitney U test was used if the assumptions of the parametric tests were not met. Chi-square (χ^2) test or Fisher's exact chi-square test were used for categorical variables. The level of significance was set at $P < 0.05$.

Table II. Psychiatric diagnoses of the children in both groups.

Diagnosis	Study Group n (%)	Control Group n (%)	Statistics
Mood disorders	9 (25.0)	0 (0.0)	$\chi^2 = 12.947$**
Anxiety disorders	17 (47.2)	9 (27.3)	$\chi^2 = 2.918^{NS}$
Psychotic disorders	1 (2.8)	0 (0.0)	$\chi^2 = 1.315^{NS}$
Eliminating disorders	12 (33.3)	6 (18.2)	$\chi^2 = 2.050^{NS}$
Disruptive behavior disorders (ADHD, ODD, CD)	15 (41.7)	4 (12.1)	$\chi^2 = 4.905$*
Tic disorders	2 (5.6)	0 (0.0)	$\chi^2 = 2.657^{NS}$
Rate of psychopathology	27 (75.0)	14 (42.4)	$\chi^2 = 7.577$**
Rate of multiple diagnosis in lifetime	22 (61.1)	8 (24.2)	$\chi^2 = 9.523$**

NS: Not Significant, *P < 0.05, **P < 0.01. ADHD: Attention deficit hyperactivity disorder; ODD: oppositional defiant disorder; CD: conduct disorder.

RESULTS

Psychiatric Diagnoses in Children

Both the frequency of psychopathology and the rate of lifetime comorbidity of these psychopathologies were significantly higher in the study group than in the control group (Table II). Mood disorders in children in the study group were as follows: 6 children (16.6%) had major depression, 2 (5.5%) had dysthymia, and 1 (2.8%) had bipolar II disorder. No mood disorders were observed in the control group. In terms of mood disorders major depression was different between the 2 groups ($\chi^2 = 8.330$, P < 0.01). ADHD was diagnosed in 9 children (25%) in the study group and in 3 children (9.1%) in the control group. ODD was diagnosed in 2 children (5.6%) in the study group and in 1 child (3%) in the control group. CD was diagnosed in 4 children (11.1%) in the study group versus none in the control group. In terms of disruptive behavior disorders, the prevalence of CD was different between the groups (Fisher's exact chi-square test, $\chi^2 = 5.430$, P < 0.05).

Sub-threshold Psychiatric Symptoms in Children

Sub-threshold symptoms of psychopathology other than those the children were diagnosed with were compared between the groups. Any symptom of psychopathology that was identified in the screening inventory and was present at a sub-threshold level was assumed to be a sub-threshold symptom. Only sub-threshold symptoms of the depressive disorders subscale were significantly higher in the study group than in the control group (chi-square test, $\chi^2 = 4.220$, P < 0.05); 13 children (36%) in the study group and 5 (15%) in the control group had sub-threshold symptoms of depression. Sub-threshold symptoms of other psychopathologies were not significantly different between the groups.

Clinical Variables in the Study Group

The presence of bipolar mood disorder in a parent was statistically related to the presence of general psychopathology in their child/children. In terms of bipolar mood disorder, variables like the presence of a family history, and age of onset, age of diagnosis, and number of hospitalizations of parents due to the disorder did not significantly differ between the children with and without psychopathology. Mean SCL scores of the spouses of parents with bipolar mood disorder were similar in both groups (Table III). It was found that both PSS acceptance/involvement and PSS psychological autonomy were significantly different in the study and control groups (acceptance/involvement in the study group: 27.2 ± 4.4; in the control group: 29.5 ± 3.7, t = –2.275: psychological autonomy in the study group: 24.1 ± 4.6; in the control group: 26.9 ± 4.5, t = –2.400). Within the study group, only the mean score of the psychological autonomy subscale of the children with psychopathology was statistically low.

DISCUSSION

In the present study the frequency of lifetime psy-

Table III. Associations between the presence of psychopathology in the study group and some clinical variables.

Clinical Variable	Presence of Psychopathology		Statistics
	Yes (n = 27) s (%)	No (n = 9) s (%)	
Parents			
Mother with bipolar disorder	16 (59.2)	5 (55.5)	$\chi^2 = 0.038^{NS}$
Father with bipolar disorder	11 (40.8)	4 (44.5)	
Bipolar mood disorder in family history			
Positive	13 (36.1)	3 (8.3)	$\chi^2 = 0.611^{NS}$
Negative	14 (38.9)	6 (16.7)	
	Median-Q	Median-Q	
Bipolar Disorder in Parent			
Age of onset	23-7	30-17	$U = 111.5^{NS}$
Age of diagnosis	35-13	34-6	$U = 100.5^{NS}$
Number of hospitalizations	0-2	2-2	$U = 105.0^{NS}$
SCL-GSI	0.79-0.74	0.7-1.35	$U = 68.0^{NS}$
SCL-PST	42.5-31	43-39	$U = 65.5^{NS}$
SCL-PSDI	1.47-0.92	1.58-1.17	$U = 59.5^{NS}$
PSS acceptance/involvement	26.5-10	30-6	$U = 89.5^{NS}$
PSS psychological autonomy	21.5-7	29-5	U = 27.5**
PSS strictness/supervision	29-8	29-9	$U = 103.5^{NS}$

NS: Not significant (P > 0.05, **P < 0.01). Q: Inter-quartile range (IQR); SCL: symptom check list; GSI: global severity index; PST: positive symptom total; PSDI: positive symptom distress index; PSS: Parenting Style Scale.

chopathology and the rates of major depression and CD (among the specific psychopathologies) were higher in the children whose mothers or fathers were followed-up for bipolar I disorder than in those in the control group. One meta-analysis that review the results of 17 studies found that the rate of any psychiatric disorder was 2.7-fold higher and the rate of mood disorders was 4-fold higher in the children of parents with bipolar mood disorder (LaPalme et al., 1997).

In most studies the rate of mood disorders, especially major and minor depressive disorders, was reported to be higher in the children of parents with bipolar mood disorder (Chang et al., 2000; Decina et al., 1983; Henin et al., 2005; LaRoche et al., 1985; Radke-Yarrow et al., 1992; Zahn-Waxler et al., 1988). Similarly, in our study the children in the study group were diagnosed with major depression more frequently or they showed symptoms of depression at a sub-threshold level more frequently, even if they were not diagnosed with major depression, than those in the control group. It was reported that 20%-40% of adult patients have the onset of bipolar mood disorder during childhood and the first attack is frequently that of depression (Lish et al., 1994). Hillegers et al. (2005) reported that depression was observed a mean 5 years before the first hypomanic attack in the adolescent children of parents with bipolar disorder. Family history of bipolar mood disorder might be a risk factor for children's and adolescents' major depression attacks to end in bipolar mood disorder (Akiskal 1995; Geller et al., 1994; Strober and Carlson, 1982). All these findings support the role of genetic factors in the etiology of bipolar mood disorder; however, further studies are needed to examine the role of environmental factors, including stressful life events, functionality of the family, and personality variables that might contribute to depression in the children of parents with bipolar disorder.

Some studies found that the frequency of CD in-

creases in the children of parents with bipolar mood disorders (Gershon et al., 1985; Grigoroiu-Serbanescu et al., 1989; Zahn-Waxler et al., 1988). It is possible that those children diagnosed with CD actually have bipolar mood disorder. These 2 disorders are in each other's differential diagnosis and have common symptoms in children and adolescents (Bowring and Kovacs, 1992; Isaac 1992). It is reported that adolescent bipolar patients exhibit explosive and disorganized behaviors, physical aggression, violation of the law, and discipline problems at school (McGlashan, 1988; Wicki and Angst, 1991). Therefore, bipolar mood disorder with onset in adolescence may appear similar to CD, or CD observed in this period might be an antecedent for future bipolar mood disorder. Moreover, the fact that CD is frequently comorbid with bipolar mood disorder in childhood and adolescence (Kovacs and Pollock, 1995; Kutcher et al., 1989; Masi et al., 2003) suggests that there might be a relationship between these 2 disorders; however, it is known that there are many psychosocial variables in the etiology of CD (Popper et al., 2003). Thus, future studies of the children of families that differ in terms of the sociocultural level and psychosocial variables involved in its etiology need to be conducted.

In the literature it is reported that the risk of bipolar disorder in children increases when the mother has bipolar mood disorder (Duffy et al., 2002; Klein et al., 1985); however, there are also studies that did not find an association between the gender of the bipolar parent and psychopathology in children (Grigoroiu-Serbanescu et al., 1989; LaRoche et al., 1987). The frequency of psychopathology in children increases as the duration of illness in the parent increase (Duffy et al., 2002; LaRoche et al., 1985). It is reported that the severity of childhood psychopathology is related to the age of onset of bipolar mood disorder in the mother or father and the presence of a psychiatric disorder in the other parent (Grigoroiu-Serbanescu et al., 1989). Other studies, however, did not find a relationship between psychiatric state of the parent without bipolar mood disorder and psychopathology in children (Klein et al., 1985; Radke-Yarrow et al., 1992). The small sample size in the present study and others makes interpretation of the findings difficult. In the present study the history of bipolar mood disorder did not differ between the relatives of the children with psychopathology, which might suggest that the psychopathology was not specifically related to bipolar disorder. Nevertheless, while interpreting these findings it should be considered that the history of bipolar mood disorder in the relatives was obtained by parental reports and not by administering the SCL to obtain a diagnosis.

Findings with regard to PSS suggest that in the presence of bipolar mood disorder, either in the mother or father, there was a decrease in the children's perception of responsiveness from their parents and the sense of autonomy in making their own decisions. It is reported that parents with bipolar mood disorder have negative interactions with their children, and that their children develop insecure attachment styles and have difficulty recognizing feelings and understanding people (Zahn-Waxler et al., 1984; Inoff-Germain et al., 1997). Families of these individuals have more conflict, while they have less self-expression and togetherness (Chang et al., 2001; Romero et al., 2005). However, it is also possible that parental attitudes toward their children change when the child has a psychological problem.

The present study has some strengths and limitations. Parents of the children in the study group did not have any psychiatric comorbidity, which increases the probability that the findings are specific to bipolar disorder, but at the same time it decreases the representativeness of the sample because other psychopathologies are frequently comorbid with this disorder. Administering the symptom checklist to the spouses of parents with bipolar disorder and assessing psychopathology in parents and children using a clinical interview and structured scales are the strengths of this study. It is possible that parents were willing to participate in the study because they thought that their children had psychological problems. The fact that the rate of psychopathology was markedly high in both the study and control groups might be related to this possibility. Small sample size and participation of only healthy parents' children in the control group limits the generalization of the findings. The cross-sectional design of the study and retrospective assessment of children's psychopathologies are other limitations. Moreover, the researcher was not blind to the study group and it is possible that this led to a bias and contributed to the diagnosis of psychopathology in the children of bipolar parents. In the literature it is reported that children of bipolar parents might have attention deficit problems; therefore, the assessment of attention by means of neuropsychological testing will improve the reliability of future research findings.

In conclusion, the children of parents with bipolar mood disorder had a high frequency of psychopathology, especially mood and disruptive behavior disorders. It is advised that physicians that assess or follow-up these patients inquire about psychiatric symptoms in their

children and refer them for psychiatric treatment when necessary. Symptoms of a mood disorder or disruptive behavior in the children of parents with bipolar mood disorder might be antecedents of a future bipolar mood disorder; therefore, these children should be followed-up.

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