



ORIGINAL ARTICLE

The Effect of Childhood Trauma on Impulsivity in Patients with Bipolar Disorder

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ABSTRACT

Objective: In this present study, we aimed to examine the association between impulsivity and childhood traumas in patients with bipolar disorder.

Methods: Sixty-four bipolar disorder patients in remission and seventy volunteers were enrolled in this case-control study. Childhood Trauma Questionnaire (CTQ-28), and Barratt Impulsivity Scale (BIS-11) were administered to all participants. The data were analyzed by Mann-Whitney U, Student T-test, and the chi-square test using the SPSS program.

Results: A significant difference was not found between the groups regarding age, gender, and marital status. There was statistically significant positive correlations between total BIS score and scores of CTQ total ($r=0.345$, $p<0.001$), physical neglect ($r=0.223$, $p=0.012$), emotional abuse ($r=0.370$, $p<0.001$), and emotional neglect ($r=0.227$, $p=0.010$). There was a statistically significant difference in total BIS-11 ($p=0.001$), motor impulsiveness ($p=0.028$), CTQ emotional neglect ($p=0.009$), and total CTQ ($p=0.038$) scores in the bipolar disorder group compared to the control group.

Conclusions: It can be said that impulsivity is associated with childhood traumas in bipolar disorder. Also, bipolar disorder patients have impulsive features, even in remission periods.

Keywords: Bipolar disorder, child abuse, child neglect, impulsive behavior

INTRODUCTION

Childhood trauma (CT) is defined as willingly or unwillingly behavior by an adult that adversely affects the child's physical and psychosocial development and causes long-term effects on the child (1). Childhood traumas increase the likelihood of people suffering from mood disorders in their lives (2). The majority of bipolar disorder patients reported childhood abuse and neglect (2). Also, episodes start early and occur more frequently, more aggression is seen, and comorbid diagnoses, substance abuse disorders, thoughts of self-harm, feeling

guilty which complicate the disease process are reported to be more frequent in bipolar disorder patients with a childhood history of neglect and abuse (2,3). For this reason, exposure of violence in the family causes not only the physical damage but also the cognitive adverse effects which affect the emotions and behaviors, disrupts social functions, and leads more damaging situations than transient hereditary disorders (4).

Impulsivity is described as acting suddenly and thoughtlessly by taking a risk without anticipating the undesirable consequences of this behavior (5). Impulsivity is a behavior that can be observed not only in psychiatric diseases but also in neurological diseases (6). Although there are not many studies directly measuring impulsivity in bipolar disorder, impulsivity has been reported to be state-dependent and trait-dependent in bipolar disorder (7-14). Impulsivity is a common trait of bipolar disorder,

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Received: June 22, 2019 **Accepted:** August 11, 2019

Citation: Tunc S, Kose S. The Effect of Childhood Trauma on Impulsivity in Patients with Bipolar Disorder. *Psychiatry and Behavioral Sciences* 2019;9(3):78-84.
https://doi.org/10.5455/PBS.20190622030752

which can lead to suicide attempts and substance use disorders. Clinically, the root of impulsivity should be differentiated from other psychiatric (comorbid personality disorder, substance use disorder, and anxiety disorder) or medical disorders. (5). Different dimensions of impulsivity can also be used to differentiate the bipolar disorder from borderline personality disorder (6). The relationship between childhood trauma and impulsive behavior has been shown in college students, bipolar disorder, major depression, suicide attempts, and cocaine users (15). It is still unknown how the presence of impulsivity and its relationship with the history of childhood trauma poses a risk for the development of attacks at remission in bipolar disorder. Therefore, in this present study, we aimed to examine higher impulsivity concordance with more severe early life adversities and the decent predictability of childhood emotional abuse for the diagnosis of bipolar disorder. Additionally, this study aimed to determine the presence, severity of impulsivity, and its relationship with childhood trauma in patients with bipolar disorder in remission.

METHODS

Study Participants and Procedure

This is a case-control study conducted in psychiatry outpatient clinic of the university hospital. Sixty-four patients with bipolar disorder in remission according to the criteria of the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) were included who were admitted to the psychiatry outpatient clinic between December 1, 2018, and March 15, 2019. Seventy volunteers were drawn who were the attendants of patients admitted to an internal medicine outpatient clinic without a psychiatric history of themselves and their families. All included participants were able to understand the study process and gave written informed consent. All participants were evaluated using the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) Axis I Disorders (SCID-1) to confirm the diagnosis and exclude comorbid psychiatric

diagnoses (16,17). Exclusion criteria for the participants were defined as following: illiteracy, poor auditory and visual acuity to complete the scales, existence of any comorbid medical problem that might impair cooperation, mental retardation, personality disorder, alcohol and substance use disorder, and other psychiatric diagnoses. Local ethics committee approval was provided for the study (28.11.2018, Number: 80576354-050-99/191). Data collection form was prepared by the researchers with reviewing literature (1-4,9-15).

Sociodemographic data form: The clinician fills the sociodemographic information form for evaluating the course of the disease, the age of onset of the disease, the number of attacks, the number of inpatients, and the treatment history.

Childhood Trauma Questionnaire (CTQ-28): CTQ is a self-report scale that scans childhood trauma experiences developed by Bernstein (18). The Turkish validity and reliability study of the scale was conducted by Sar et al. (19). CTQ has two types, which includes 28 and 53 questions. CTQ-28, a 28-item form of the scale was used. The scale has five sub-dimensions, which are sexual abuse, emotional neglect, emotional abuse, physical neglect, and physical abuse. Also, there are three minimization-denial questions. Cronbach's alpha value, which indicates the internal consistency of the scale, is 0.93 (19).

Barratt Impulsivity Scale (BIS-11): Barratt developed BIS in 1959, which measures impulsivity (20,21). The Turkish validity and reliability study of the scale was conducted by Gulec et al. in 2008 (22). The scale is a self-assessment scale containing 30 items. The scale has three sub-scales, which are 'attentional' (attention, cognitive instability), 'motor' (motor, perseverance), and 'non-planning' (self-control, cognitive instability). There are four response options which are rarely, sometimes, often, and always as a Likert type scale (22). Items 1, 12, 13, 20, and 30 are scored in reverse order to avoid response bias. The total score of the items of the scale shows the impulsivity level. A high score indicates an upper level of impulsivity. The internal reliability coefficient was 0.71 in the original study of the

scale. However, the internal reliability coefficient was 0.82 in the adaptation study (22).

Statistical Analysis

Research data were evaluated through SPSS (Statistical Package for Social Sciences) for Windows 20 (SPSS Inc, Chicago, IL). The measurable data were presented as mean±standard deviation, median, minimum-maximum, frequency, and percentage. Chi-square test was used to evaluate categorical variables. The variables with homogeneous distribution were analyzed using Simple Student T-Test. The relationship between nonhomogeneous distributed groups was analyzed using the Mann-Whitney U test. Correlation analyses (Pearson’s for parametric and Spearman’s for nonparametric) were performed. Furthermore, significant independent variables according to the Mann-Whitney U test and Simple Student t-test were further analyzed with logistic regression (Backward LR). Statistical significance level was accepted as p<0.05 for all tests (Confidence Interval-CI: 95%).

RESULTS

Table 1 shows no statistically significant difference between the groups in terms of age, gender, and marital status (p>0.05).

Table 2 presents the comparison of the BIS and CTQ-28 scores of cases and controls. Attentional impulsiveness, motor impulsiveness, non-planning impulsiveness, and total BIS scores were significantly higher in the bipolar disorder group than in the control group (p<0.05). CTQ physical neglect, emotional abuse, emotional neglect, and

total scores were significantly higher in the bipolar disorder group than the healthy controls (p <0.05).

Table 3 shows the results of logistic regression analysis. Accordingly, total BIS score (p=0.001), motor impulsiveness score (p=0.028), CTQ emotional neglect score (p=0.009), total CTQ score (0.038) was higher in bipolar disorder group compared to the healthy controls.

Correlations between total BIS score and CTQ total and subscales scores are shown in Table 4. Correlation analyses showed that there was statistically significant positive correlation between total BIS score and scores of CTQ total (r=0.345, p<0.001), physical neglect (r=0.223, p=0.012), emotional abuse (r=0.370, p<0.001), and emotional neglect (r=0.227, p=0.010).

DISCUSSION

In this study, the relationship between impulsivity and childhood trauma was examined in patients with bipolar disorder in remission. There was a significant relationship between BIS subscales and CTQ-28. It can be said that impulsivity is associated with childhood trauma.

A study from ten countries with 3.407 young and adults showed that childhood sexual abuse was higher in bipolar disorder patients than in healthy controls (23). In another study on bipolar disorder patients, 49% of female patients and 36% of male patients reported a history of trauma in childhood and adolescence (24). Therefore, it can be said that the effects of trauma history continue for a long time and are associated with the disease process on bipolar disorder patients. The prevalence of sexual abuse, physical abuse, and both physical and sexual abuse is reported to be 12%, 56%, and 10% respectively, in bipolar disorder patients (25).

Table 1: Sociodemographics of participants

	Controls	Bipolar disorder patients	t	p
Age (mean±SD)	33.43±10.37	33.42±11.18	0.004	0.997
	Controls n (%)	Bipolar disorder patients n (%)	χ ²	
Female	37 (55.2)	30 (44.8)	0.479	0.489
Male	33 (49.3)	34 (50.7)		
Single	38 (55.9)	30 (44.1)	0.735	0.391
Married	32 (48.5)	34 (51.5)		

SD: Standard Deviation; n: Number; %: Percentage of Columns

Table 2: Results of Barratt Impulsivity Scale (BIS) and Childhood Trauma Questionnaire (CTQ) scores of participants and controls

Independent variables	Group	n	Dependent variable: Bipolar disorder			
			Mean	SD	t	p
Total BIS	Control	70	59.0000	9.39164	-5.075	0.001*
	Bipolar	60	68.7000	12.36493		
Attentional impulsiveness	Control	70	15.2143	3.27438	-5.033	0.001*
	Bipolar	60	18.6500	4.48661		
Motor impulsiveness	Control	70	19.2857	4.02940	-3.497	0.001*
	Bipolar	60	22.2500	5.60153		
Non-planning impulsiveness	Control	70	24.5000	4.73577	-3.659	0.001*
	Bipolar	60	27.5667	4.79536		
CTQ physical neglect	Control	69	7.2464	3.09841	-2.994	0.003*
	Bipolar	59	9.0000	3.52821		
CTQ emotional neglect	Control	69	9.9565	4.84900	-3.557	0.001*
	Bipolar	59	12.9831	4.73975		
Total CTQ	Control	69	36.2754	12.64781	-2.965	0.004*
	Bipolar	59	43.3559	14.37162		
**	Group		Median	Min-Max	Mean Rank	
CTQ physical abuse	Control	69	5	5-15	60.91	0.174**
	Bipolar	59	5	5-19	68.69	
CTQ emotional abuse	Control	69	6	5-13	57.64	0.020**
	Bipolar	59	8	5-19	72.53	
CTQ sexual abuse	Control	69	5	5-21	60.09	0.059**
	Bipolar	59	5	2-15	69.65	

CTQ: Childhood trauma questionnaire; n: Number; *Student T test; **Mann-Whitney U test

Table 3: Results of logistic regression (Backward LR) analysis of factors affecting impulsivity and childhood trauma in patients with bipolar disorder in remission

Variables in the equation	CTQ and BIS subscales	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 2 ^a	Total BIS	0.238	0.074	10.261	1	0.001	1.269	1.097	1.468
	Motor impulsiveness	-0.252	0.115	4.842	1	0.028	0.777	0.620	0.973
	Non-planning impulsiveness	-0.179	0.095	3.553	1	0.059	0.836	0.693	1.007
	CTQ physical neglect	0.223	0.128	3.049	1	0.081	1.250	0.973	1.606
	CTQ emotional abuse	0.238	0.132	3.253	1	0.071	1.268	0.980	1.642
	CTQ emotional neglect	0.209	0.079	6.924	1	0.009	1.232	1.055	1.440
	Total CTQ	-0.126	0.061	4.289	1	0.038	0.882	0.783	0.993

^aVariable (s) entered on step 1: Total BIS; attentional impulsiveness; motor impulsiveness; non-planning impulsiveness; CTQ physical neglect; CTQ emotional abuse; CTQ emotional neglect; total CTQ; CTQ: Childhood Trauma Questionnaire; BIS: Barratt Impulsivity Scale

These rates are reported to be consistent with the overall percentages.

Additionally, more extended hospitalization periods and higher depressive episodes were reported in patients with a history of abuse (25). It has been shown that

approximately half of the bipolar disorder patients have a history of physical (24%) and sexual (21%) abuse, and those with a history of abuse have an early onset of the disease and have more severe manic symptoms (26). It has been reported that CT affects the course and

Table 4: Correlation analysis results of Barratt Impulsivity Scale (BIS) Total score and Childhood Trauma Questionnaire (CTQ) total and subscale scores of participants and controls

Total BIS and CTQ total and subscales	r	r ²	p	Correlation significance level
Total CTQ*	0.345	0.119	<0.001	0.01
CTQ physical neglect*	0.223	0.050	0.012	0.05
CTQ emotional abuse**	0.370	0.131	<0.001	0.01
CTQ emotional neglect*	0.227	0.052	0.010	0.05

*Pearson's correlation analysis, **Spearman's correlation analysis; CTQ: Childhood Trauma Questionnaire; BIS: Barratt Impulsivity Scale

outcome of treatment in bipolar disorder (27). Early onset of bipolar disorder, longer duration of manic and depressive episodes, rapid cycling course, substance abuse, and self-harm attempts are related to childhood trauma (11,24,26,28). In this study, although the scores of CTQ (physical neglect, emotional abuse, emotional neglect, and total scores) were found to be higher in bipolar disorder patients than the control group, only emotional neglect and total score were statistically significant in logistic regression analysis. When the subscales of the CTQ were examined, the factor affecting total CTQ score was CTQ emotional neglect subscale in logistic regression analysis.

Few studies measure impulsivity directly in patients with bipolar disorder (9,10). Impulsivity levels of bipolar disorder patients are found high also in remission periods (10,11,13,14,29). Although BIS scores (total, attentional impulsiveness, motor impulsiveness, and non-planning impulsiveness) were found to be higher in bipolar disorder patients compared to the control group, only motor impulsiveness and total score were statistically significant in logistic regression analyses. When the subscales of the BIS were examined, the factor affecting total BIS score was motor impulsiveness subscale in logistic regression analysis.

All patients with bipolar disorder were using a mood stabilizer (30). However, the impulsivity scores of BIS were found higher in bipolar disorder patients than the control group, probably indicating that impulsivity was not only situational (state)-dependent but also structural (trait)-dependent. Higher levels of impulsivity have also been reported in elderly patients with bipolar disorder (14). Impulsivity is not only shown during the mixed or manic episode of bipolar disorder (31). The relationship between impulsivity and early onset of the disorder is also reported in euthymic period (13). This result can be

considered as an indicator that impulsivity is not affected by the most remarkable disease periods. The fact that impulsivity is found to be high even in periods other than depression and mania and in older ages supports the view that it has a fundamental role in the pathophysiology of bipolar disorder. Considering the relationship between impulsivity and other clinical features may be useful not only in the follow-up of bipolar disorder patients but also in preventing recurrence of attacks in bipolar disorder patients because impulsivity is an important indicator of poor clinical outcomes and risky behavior (32,33). Impulsivity is also associated with suicidal attempts in bipolar disorder, previous psychotic attacks, more depressive episodes, substance abuse, and longer duration of illness (34-36). Impulsivity is reported to be associated with the presence of childhood trauma rather than a feature especially in euthymic bipolar disorder unlike being the core feature of attention deficit hyperactivity disorder (ADHD) and borderline personality disorder (BPD) (37,38). In this study, there were statistically significant positive correlations between total BIS score and scores of CTQ total, physical neglect, emotional abuse, emotional neglect. Additionally; CTQ emotional neglect, total CTQ, total BIS, and motor impulsiveness scores were significantly different in bipolar disorder patients compared to the control group.

The small number of participants, the use of self-assessment scales, and psychotropic drug use despite remission of cases are the limitations of our study.

As a result of the study, it can be said that there is a relationship between childhood trauma and impulsivity in bipolar disorder. Patients with bipolar disorder also show impulsive trait during remission. Childhood traumas are also frequently detected in their past histories. Childhood traumas harm individual's self-esteem, self-confidence, and a sense of hope for the future (39).

Therefore, childhood trauma may reduce the ability to cope with later stressful life events, leading to impulsiveness and impaired cognitive functions (28).

Childhood trauma also increases susceptibility to markers of violence, such as suicide attempts and substance use disorder. These are essential potential risk factors both for the occurrence and as well as for the severe recurrence of the bipolar disorder in the process. Further studies are needed to evaluate whether impulsivity is the cause or effect of bipolar disorder, whether it is trait-dependent or state-dependent, and its effects on prognosis and treatment. On the other hand, clinicians' evaluation and treatment of childhood trauma history in bipolar disorder patients will facilitate the follow-up of the disorder by decreasing impulsivity, and it will affect the course (less recurrence, less substance use, and fewer suicide attempts) positively.

Ethics Committee Approval: Local ethics committee approval was received for the study (Number: 80576354-050-99/191).

Informed consent: A written informed consent was also provided by each participant after a full explanation of the study.

Conflict of Interest: No conflicts of interest related to this article.

Financial Disclosure: No financial support.

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