J. Behav. Ther. & Exp. Psychiat. 46 (2015) 14–18

Contents lists available at ScienceDirect

Journal of Behavior Therapy and Experimental Psychiatry

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

Short report

Inter-episode affective intensity and instability: Predictors of depression and functional impairment in bipolar disorder

Anda Gershon [a, *], Polina Eidelman [b]

[a] Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, 401 Quarry Road, Stanford, CA 94305-5717, USA
[b] Cognitive Behavior Therapy & Science Center, 5435 College Ave., Suite 100-1, USA

ARTICLE INFO

Article history:
Received 30 December 2013
Received in revised form
30 May 2014
Accepted 2 July 2014
Available online 7 August 2014

Keywords:
Bipolar disorder
Affect
Illness course
Longitudinal study
Depressive symptoms

ABSTRACT

Background and objectives: Dysregulated affect is a hallmark feature of acute episodes of bipolar disorder (BD) and persists during inter-episode periods. Its contribution to course of illness is not yet known. The present report examines the prospective influence of inter-episode affect dysregulation on symptoms and functional impairment in BD.
Methods: Twenty-seven participants diagnosed with inter-episode bipolar I disorder completed daily measures of negative and positive affect for 49 days (±8 days) while they remained inter-episode. One month following this daily assessment period, symptom severity interviews and a measure of functional impairment were administered by telephone.
Results: More intense negative affect and positive affect during the inter-episode period were associated with higher depressive, but not manic, symptoms at the one-month follow-up assessment. More intense and unstable negative affect, and more unstable positive affect, during the inter-episode period were associated with greater impairment in home and work functioning at the follow-up assessment. All associations remained significant after controlling for concurrent symptom levels.
Limitations: The findings need to be confirmed in larger samples with longer follow-up periods. A more comprehensive assessment of functional impairment is also warranted.
Conclusions: The findings suggest that a persistent affective dysregulation between episodes of BD may be an important predictor of depression and functional impairment. Monitoring daily affect during inter-episode periods could allow for a more timely application of interventions that aim to prevent or reduce depressive symptoms and improve functioning for individuals with BD.

1. Introduction

Bipolar disorder (BD) is a seriously disabling and life threatening disorder with a significant public health burden. BD is associated with high rates of recurrence, persistent functional impairment, and low quality of life (Altshuler et al., 2006; Gitlin, Mintz, Sokolski, Hammen, & Altshuler, 2011; Joffe, MacQueen, Marriott, & Young, 2004; Judd et al., 2008; Vieta, Sanchez-Moreno, Lahuerta, & Zaragoza, 2008). Understanding the mechanisms that underlie sustained inter-episode impairment in BD is important to developing more effective interventions that prolong symptom-free periods and improve quality of life.

Acute episodes in BD are defined by affective dysregulation, with abnormally and persistently elevated or irritable mood serving as core criteria for episodes of (hypo)mania, and a distinct period of depressed or irritable mood, or anhedonia, serving as core criteria for depression (American Psychiatric Association, 2000). Affective dysregulation has also been shown to persist between acute episodes in BD. Studies using ecological momentary assessment methods document heightened and more variable negative affect among remitted or subsyndromal bipolar samples relative to controls (Gershon et al., 2012; Havermans, Nicolson, Berkhof, & deVries, 2010; Hofmann & Meyer, 2006; Knowles et al., 2007; Lovejoy & Steuerwald, 1995). Increased variability in positive affect has also been documented among remitted or subsyndromal bipolar samples relative to controls (Hofmann & Meyer, 2006; Knowles et al., 2007; Lovejoy & Steuerwald, 1995), but support for group differences in intensity of positive affect is less consistent (e.g., Knowles et al., 2007).

The persistence of affective dysregulation during inter-episode periods suggests that it may be an illness maintaining mechanism and a contributor to the high rates of functional impairment in BD

* Corresponding author.
E-mail address: gershon@stanford.edu (A. Gershon).

http://dx.doi.org/10.1016/j.jbtep.2014.07.005
0005-7916/

(Soreca, Frank, & Kupfer, 2009). It may be the case that dysregulated negative affect is particularly problematic. Long-term naturalistic studies of the presentation of BD have shown that depression predominates the course of the disorder (Judd et al., 2002; Kupka et al., 2007). For example, in a longitudinal study that collected weekly mood ratings in bipolar participants over the course of two years, depressive symptoms were reported 47.7% of the time, manic symptoms 7% of the time, mixed symptoms 8.8% of the time, and euthymia 36.5% of the time (Bopp et al., 2010). Thus, depressive symptoms were present for nearly half the time in these patients' lives, whereas manic symptoms were relatively infrequent. Studies also indicate that depressive symptoms may be particularly impairing. For instance, subsyndromal depressive symptoms have been found to be more strongly related to functional impairments than subsyndromal manic symptoms (e.g., Fagiolini et al., 2005).

There are several potential pathways by which affective dysregulation may contribute to symptoms and impairment in BD. For instance, individuals with BD may utilize maladaptive coping styles, such as rumination, in response to negative affect (Johnson, McKenzie, & McMurrich, 2008). Rumination may, in turn, act to perpetuate negative affect, thereby increasing vulnerability to depression (Alloy et al., 2009; Pavlickova et al., 2013) and interfering with occupational and social functioning (Kuehner & Huffziger, 2012; Lam, Schuck, Smith, Farmer, & Checkley, 2003). Maladaptive coping responses to dysregulated positive affect, including increased risk-taking behavior, may similarly increase vulnerability to mania symptoms and impairment (Pavlickova et al., 2013; Thomas & Bentall, 2002). The possibility that affective dysregulation contributes to a poorer course of illness in BD has been supported by findings that affective lability and intensity during the inter-episode period are associated with a more severe illness history, including earlier onset, greater comorbidity, and an increased number of past illness episodes (Henry et al., 2008). Accruing evidence from epidemiological and clinical studies has also highlighted the importance of affective dysregulation in understanding the phenomenology of bipolar depression, calling for a careful consideration of this feature in clinical evaluations of bipolar patients (Akiskal, 2005). Nevertheless, to the best of our knowledge the influence of daily affect dysregulation, as experienced during inter-episode period, on future symptoms and functioning in BD has not yet been directly examined.

The goal of the present study is to use longitudinal data to examine the influence of inter-episode affect intensity and instability on symptoms and functional impairment in BD. Affective intensity and instability were measured using daily reports of positive and negative affect collected over a 7-week inter-episode period. We hypothesized that more intense and unstable affect during the inter-episode period of BD would predict more severe symptoms and greater functional impairment at a one-month follow-up assessment.

2. Method

2.1. Participants

This study uses a sub-sample from a larger study examining the relationship between sleep and affect in participants with inter-episode bipolar I disorder and healthy controls (Gershon et al., 2012). The current report focuses on twenty-seven inter-episode bipolar I participants who completed the 7-week daily assessment of affect and also completed a symptom and functioning follow-up assessment one month later. All participants met criteria for BD I and remained inter-episode throughout the 7-week daily assessment period. Inter-episode status was defined as: (a) the absence of a current mood episode based on *DSM-IV TR* criteria (American Psychiatric Association, 2000); and (b) no more than mild symptom severity scores on the Inventory of Depressive Symptomatology Clinician Rated (IDS-C; score $\leq$23; Rush, Gullion, Basco, Jarrett, & Trivedi, 1996) and the Young Mania Rating Scale (YMRS; score $\leq$11; Young, Biggs, Ziegler, & Meyer, 1978). Participants were not excluded on the basis of psychiatric comorbidities.

2.2. Procedure

All procedures were approved by the University of California's Committee for the Protection of Human Subjects. As illustrated in Fig. 1, at baseline participants provided informed consent and were interviewed using the Structured Clinical Interview for *DSM–IV* (SCID; First, Spitzer, Gibbon, & Williams, 2002), the IDS-C, and the YMRS to ascertain psychiatric disorder history and confirm current inter-episode status. Eligible participants were given daily affect diaries and were asked to complete these each evening approximately 2 h prior to bedtime. Participants were asked to leave a voicemail with their diary responses each evening in order to obtain a time-stamped record of completion.

Participants returned to the lab one month and two months following their baseline visit. During each of these visits, continued inter-episode status was confirmed using the SCID, the IDS-C, and the YMRS. Participants who met criteria for a current mood episode at either visit, and/or who exceeded symptom severity thresholds, were excluded from further evaluation, assessed for safety, and (with permission) re-contacted in two weeks for reassessment. Thus, in total we required that participants be inter-episode for three months (approximately 12 weeks) in order to be included in the study. There is evidence to suggest that roughly 40% of individuals with bipolar I disorder experience a mood episode within one year of a euthymic period (Judd et al., 2008; Perlis et al., 2006). Additionally, a recent study of individuals with bipolar disorder who were enrolled in the study during a hospitalization found that 68% had a relapse during the 4-year follow-up period. For those participants who relapsed, the average time to relapse was 208 days (or approximately 29 weeks) (Simhandl, Konig, & Amann, 2014). Given these previous findings, our inclusion of participants who were in the inter-episode period for three months is representative of the natural course of bipolar disorder. The study duration also allowed us to prospectively gather data on symptoms and impairment present during the inter-episode period.

At three months following the baseline assessment, the IDS-C, YMRS, and a questionnaire measuring functional impairment were administered to participants by telephone.

2.3. Measures

2.3.1. Psychiatric disorders

The SCID (First et al., 2002) was used to assess Axis I psychiatric disorders. Diagnostic inter-rater reliability was established for a randomly selected sample of audio taped interviews ($n = 17$). Primary diagnoses (bipolar) matched those made by the original interviewer in all cases ($k = 1.00$).

2.3.2. Symptom severity

The IDS-C (Rush et al., 1996) and the YMRS (Young et al., 1978) were used to assess current mood symptoms. The IDS-C is a 30-item interview measure of depression severity. Scores range from 0 to 84, with higher scores indicating greater severity. Scores less than 24 indicate asymptomatic to mild symptom severity (Rush et al., 1996). The YMRS is an 11-item interview measure of mania severity. Scores range from 0 to 60, with higher scores indicating greater severity. Scores less than 12 indicate asymptomatic to mild symptom severity (e.g., Suppes et al., 2005). Intra-class correlations