Relationship of general medical burden, duration of illness and age in patients with bipolar I disorder

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Abstract

Objective: This study was aimed at evaluating general medical burden in a group of 111 patients with bipolar I disorder.
Methods: Data were drawn from participants entering the Bipolar Disorder Center for Pennsylvanians (BDCP) protocol. General medical burden was assessed by completing the Cumulative Illness Rating Score (CIRS) from chart review.
Results: The mean age of the sample was 42.1 (11.5), mean CIRS total score was 4.7 (2.9), and mean number of categories endorsed was 3.4 (1.7). Medical burden showed a positive relationship with increasing age and with duration of illness. CIRS scores and number of organ/system categories endorsed were significantly higher in patients with more than 21 years of illness than in patients with 0–9 years of illness ($p < .0001$) or with 10–20 years of illness ($p < .0001$). Medical burden was related to duration of illness even after controlling for age. The most frequently endorsed illness categories were cardiovascular disease, (with hypertension and hyperlipidemia being the most frequent conditions) and endocrine/metabolic (with obesity, thyroid dysfunction, and type 2 diabetes being the most common conditions).
Conclusions: Patients with bipolar disorder carry a substantial burden of general medical conditions, related to age and duration of illness. These results suggest that the development and testing of specific interventions that target medical risk factors and medical burden in patients with bipolar disorder are urgently needed, especially early in the course of the illness, when patients appear to accumulate medical comorbidity at a rapid rate.
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1. Introduction

Bipolar disorder is a chronic disease that is associated with a potentially devastating impact on patients' well-being and social, occupational, and general functioning (Revicki et al., 2005). The disorder ranks as the sixth leading cause of disability in the world, with an economic burden that in the US alone that was estimated more than a decade ago at $7 billion in direct medical costs and $38 billion (1991 values) in indirect costs (Wyatt et al., 1995). A more recent study analyzing data from six large US corporations found bipolar disorder to be their most costly mental health condition, in terms of both medical care and lost productivity (Goetzel et al., 2003).

Medical disease and medical risk factors are common in bipolar disorder, affect the course and severity of bipolar disorder and its treatment (American Psychiatry Association, 2002; Fagiolini et al., 2003; Fagiolini et al., 2005), and lead to even greater morbidity, mortality, and disability (Hajek et al., 2005). Many medical problems have been cited in the few reports focused on this population, the most common of which are cardiovascular disease, diabetes, obesity, and thyroid disease (Fagiolini et al., 2003; Angst et al., 2002; Cassidy et al., 1999; Cole et al., 2002). The accumulation of key medical risk factors related to

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excessive nicotine use, alcohol and drug use, concomitant anxiety, and eating disorders can lead to the early onset of medical diseases with poor long-term outcomes. The presence of medical comorbidity negatively affects the course of bipolar disorder. For example, Cassidy et al. (1999) evaluated the prevalence of diabetes mellitus in inpatients with bipolar disorder and found that the total number of psychiatric hospitalizations was significantly greater in the diabetic group than in age-matched non-diabetic patients with bipolar disorder. Ruzickova et al. (2003) found that bipolar patients with diabetes were more chronically ill, rapid cycling, and had lower global functioning. Cole and colleagues (2002) described how lower pre-treatment thyroid function predicted longer time to achieve remission and slower treatment response, while Fagiolini and associates (2003, 2005), reported on the relationship of obesity and metabolic syndrome to worse clinical course in bipolar disorder.

Although several reports have shown a high prevalence of single medical conditions, few studies to date have evaluated the total medical burden associated with bipolar disorder and the impact of total medical burden on outcome. Beyer et al. (2005) found that the number of medical comorbidities significantly predicted the first-visit severity score of the Clinical Global Impression (CGI) for patients with bipolar disorder, but it was not significantly related to treatment response. Kilbourne and colleagues (2004) found that Veterans Administration (VA) patients with bipolar disorder showed rates of all cardiovascular risk factors and diabetes that were significantly higher than the rate in the national VA cohort. Furthermore, the VA patients with bipolar disorder were 4–7 years younger that the general cohort, suggesting not only greater medical burden, but greater burden at an earlier age. Similar findings of the emergence of chronic conditions at a young age were reported by Carney and colleagues (2006). Thompson and his associates (2006) showed that general medical burden is associated with number and total lifetime duration of depressive episodes in patients with bipolar disorder and that the severity of medical illnesses is associated with worse prognosis of current depressive episodes.

The present report examines the prevalence of medical burden in a group of 111 patients with bipolar I disorder participating in the multi-site Bipolar Disorder Center for Pennsylvanians study. The sample for the present report represents a subsample from the main study at the Pittsburgh site. This subsample consists of adult subjects with a diagnosis of bipolar I disorder. We hypothesized that there would be a high prevalence of medical comorbidities in the study sample and that the degree of medical burden would correlate with the duration of bipolar disorder.

Our hypotheses were based on our clinical observations during the trial, clinical experience with patients with bipolar I disorder, and the published reports cited above concerning the relationship of certain medical conditions, such as obesity (Fagiolini et al., 2003), metabolic syndrome (Fagiolini et al., 2005), thyroid disorders (Cole et al., 2002),

and diabetes (Cassidy et al., 1999; Ruzickova et al., 2003; Regenold et al., 2002), to a worse course of bipolar disorder.

2. Methods

The Institutional Review Board at the University of Pittsburgh reviewed and approved all the procedures described in this protocol and all subjects gave written informed consent prior to participating in the study.

The Bipolar Disorder Center for Pennsylvanians study is a multi-center randomized controlled study involving subjects with bipolar I, bipolar II, bipolar NOS, or schizoaffective bipolar subtype. The study design and procedures have been described previously (Fagiolini et al., 2005; Fagiolini et al., 2007). Briefly, the study compares the clinical outcomes of subjects who receive Enhanced Clinical Intervention (ECI), an individual psychoeducational intervention for bipolar disorder, with those of subjects who do not receive ECI. All subjects received a background of standardized, accepted pharmacotherapy regimens. Potential subjects were assessed with the Structured Clinical Interview for DSM-IV (SCID) (First et al., 1995) at study entry. Exclusion criteria from the main study were medical contraindications to the psychopharmacological treatment, pregnancy, organic mental disorders, mental retardation (I.Q. $\leqslant$ 70), and current alcohol or substance abuse; however, alcohol or substance dependence in early remission was not reason for exclusion.

The present study includes 111 adult patients with bipolar I disorder, consecutively recruited at the Pittsburgh site of the Bipolar Disorder Center for Pennsylvanians study. Many of the reports on medical comorbidity published to date include both bipolar I and bipolar II disorder (Ruzickova et al., 2003; Kilbourne et al., 2004). Our decision to limit this report to patients with a diagnosis of bipolar I disorders was based on our clinical observation, and on published data on mortality (Angst et al., 2002) in bipolar disorder, suggesting differences among the different subtypes of the disorder.

At study entry, all patients underwent a complete medical history and physical exam, blood pressure, anthropometric measurement, and routine blood studies. The medical history and physical exam were conducted using a standardized form that allows for systematic investigation of each organ/system, as well as a summary of the major findings. All past medical conditions and any subsequent medical workups were included in the medical record of each patient.

2.1. Assessment of medical comorbidity

A trained physician reviewed the charts of all patients included in the present report and assigned a score on the Cumulative Illness Rating Scale (CIRS). The CIRS is an instrument originally developed to assess chronic medical burden in adult (Linn et al., 1968) and geriatric populations (Miller et al., 1992). Many studies have confirmed good