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A 2-year follow-up study of discharged psychiatric patients with bipolar disorder

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ABSTRACT

This study investigated medication compliance, disease recurrence and the recovery of social function in discharged psychiatric patients with bipolar disorder. A 2-year follow-up was conducted on all patients with bipolar disorder, who were hospitalized in our psychiatric department between June 2010 and May 2011. Risk factors for recurrence were analyzed based on a self-designed questionnaire. Of the 252 patients in the study, 210 had complete information (83.3%) for the 2-year follow-up: 170 cases of bipolar I disorder and 40 cases of bipolar II disorder. The 1-year and 2-year full-compliance rates were 41.0% and 35.7%, respectively. The 1-year and 2-year recurrence rates were 42.4% and 61.0%, respectively. Statistically significant differences in rates were found between the bipolar subtypes for 1-year full compliance, 1-year non-compliance, 2-year recurrence, and 2-year readmission. Logistic regression identified different sets of independent variables that were risk factors for recurrence, and protective factors for recurrence at 1 year and 2 years after hospital discharge. The results of the follow-up indicated that the situation of patients with bipolar disorder after discharge is not optimistic, because of high recurrence rates, high non-compliance rates and low recovery rates. Clinical and social experts should pay more attention to the situation.

1. Introduction

Bipolar disorder is a common, disabling illness that is chronic and recurrent (Lin et al., 2006; Malhi et al., 2009; Leboyer and Kupfer, 2010). An early correct diagnosis of bipolar disorder, in conjunction with appropriate treatment, can contribute to an improved prognosis (Price and Marzani-Nissen, 2012; Cullen-Drill and Cullen-Dolce, 2008). Many recent studies have shown that pharmacotherapy and psychotherapy can help patients with bipolar disorder achieve remission and reduce relapse (Thase, 2008; Prasko et al., 2013). Although pharmacological and non-pharmacological treatments have made progress in treating bipolar disorder, the disorder often produces multiple relapses and impaired psychological functioning (Treuer and Tohen, 2010; Kupka and Regeer, 2007), and the overall prognosis of bipolar disorder does not appear to have been altered by such treatments (El-Mallakh et al., 2010).

Medication non-adherence during the maintenance treatment of bipolar disorder is common, resulting in many adverse outcomes (Sajatovic et al., 2006; Bobo and Shelton, 2010). Given the correlation of non-adherence with high risk of relapse and hospitalization among bipolar disorder patients, it is important to improve medication adherence for effective treatment (Depp et al., 2008). Many studies have shown that providing psycho-education to patients with bipolar disorder can increase medication adherence and prevent relapse (Sienaert and de Fruyt, 2008).

We conducted a 2-year, follow-up study to investigate the degree of medication adherence and the recovery status of bipolar disorder patients discharged from a psychiatric hospital. The study was intended to provide relevant information that would contribute to improve prognosis and prevent relapse of bipolar disorder. This article summarizes the results of that study.

2. Methods

2.1. Patients

The study sample consisted of patients who (1) were hospitalized for some time between June 2010 and May 2011 in our psychiatric department, and (2) were diagnosed with bipolar disorder, according to the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (DSM-IV), by one attending physician and one associate chief physician. Patients were enrolled in the 2-year follow-up study regardless of their sex, age or subtype of bipolar disorder. All patients or their legal representatives signed informed consent before the patients entered the study. The study was approved by the Ethics Committee of WuZhongpei Memorial Hospital, Shunde District of Foshan City.

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2.2. Study assessments

During the first visit, all bipolar disorder patients were evaluated at the time of discharge. Hospital records of bipolar disorder patients were used to extract general data information, including subtypes of the diagnosis, using a self-designed form. Meanwhile, clinical episode characteristics and medications of all bipolar disorder patients were recorded. The patients were followed-up for 2 years, including any possible recurrence visit at the time of readmission. The study used a prospective design to investigate medication compliance, disease recurrence and the recovery of social function, through a telephone or a home-visit interview, which was natural and non-interventional. All medication decisions given to patients during the study period were determined only by the clinicians themselves.

Medication adherence was measured by the medication possession ratio (MPR). The MPR was calculated as the number of days that psychotropic drugs were taken in relation to the total number of days in the follow-up period according to the reports of the family members and the medical records of the patients (Lage and Hassan, 2009). Patients were classified into three groups: full compliance (MPR greater than 0.80), partial compliance (MPR greater than 0.50–0.80), and non-compliance (MPR less than or equal to 0.50) (Sajatovic et al., 2007).

The assessment of recurrence was judged comprehensively through the reports of patients and family members, the evaluation of researchers, and inpatient records of recurrent admission, which was considered the clinical criteria for affective episode according to DSM-IV. The Clinical Global Impressions scale for use in bipolar illness (CGI-BP) was used to determine the recurrence of affective episodes. Definition of recurrence was defined a priori as CGI-BP mania score ≥ 3 or CGI-BP depression score ≥ 3.

At baseline and follow-up visit, vocational functioning was assessed by the Global Assessment of Functioning (GAF) scales and employment status was calculated as employed or unemployed. Employed was defined that bipolar disorder outpatients could return to their primary work or school competently.

2.3. Statistics

All of the bipolar disorder patients were classified into two subtypes, according to the DSM-IV: bipolar I disorder or bipolar II disorder. Differences between the subtypes were statistically analyzed for medication compliance rate, recurrence rate, and rate of recovery of social function.

The statistical analyses were performed by the Statistical Package for the Social Science software release 17.0 (SPSS). Continuous variables are given as means $\pm$ standard deviations, and categorical variables are given as percentage. The chi-square test was used for comparisons between categorical variables, for which the level of statistical significance was $\alpha=0.05$.

Logistic regression analysis, using the method of backward likelihood ratios, was performed to examine the degree to which different independent variables predicted the dependent variables of recurrence within 1 year and 2 years. The independent variables were gender; age of onset; course of disease; educational level; marital status; character before disease; family history; previously hospitalized; frequency of hospitalizations; type of first episode; duration of definite diagnosis; diagnostic classification type; medication type; medication compliance; lack of family support; and no return to work. The level of significance for the logistic analyses was $\alpha=0.10$.

3. Results

3.1. Baseline characteristics of patients

A total of 252 patients with bipolar disorder were enrolled (44.8% were male; mean age $=38.2 \pm 13.5$ S.D.). 132 patients (52.4%) were previously unemployed prior to hospitalization. At baseline, the GAF score was 70.4 ± 8.6 S.D. and the medication type was 2.9 ± 0.8 S.D. Of the 252 patients, 232 patients (92.1%) used atypical antipsychotics, 247 patients (98.0%) used mood stabilizers. Complete information was obtained for 210 of the patients (83.3%) from the 2-year follow-up, including 170 cases of bipolar I disorder and 40 cases of bipolar II disorder (see Table 1).

3.2. Follow-up comparisons of bipolar I and bipolar II patients

Overall, the 1-year full-compliance rate was 41.0% and the 2-year rate was 35.7%. Of the 210 patients, 89 patients (42.4%) experienced 116 episodes of recurrence within the 1-year observation period: 83 episodes with mania, 24 with depression, and nine mixed episodes. The mean time to recurrence was 5.9 ± 3.6 months. Some 128 patients (61.0%) experienced 180 episodes of recurrence within the 2-year observation period: 126 episodes with mania, 40 with depression, and 14 with mixed episodes. The mean time to recurrence was 10.0 ± 6.7 months. In all, 42.4% of patients recovered sufficiently to return to work or study within 1 year. Significant differences were found between the subtypes for the 1-year full-compliance rate ($\chi^2=4.032$), the 1-year non-compliance rate ($\chi^2=3.927$), the 2-year recurrence rate ($\chi^2=7.069$) and the 2-year readmission rate ($\chi^2=5.288$) ($p<0.05$) (see Table 2).

3.3. Recurrence analysis

The logistic regression (at the level of $\alpha=0.10$) revealed four key findings (see Table 3). First, previous hospitalization, lack of family support, no return to work and medication type were risk factors for recurrence of bipolar disorder within 1 year of hospital

Table 1
Sociodemographics, clinical episode characteristics and medications of all bipolar disorder patients and patients with complete information at baseline.

Variable	All patients ($N=252$)	Patients with complete information ($N=210$)
Sociodemographics		
Gender, *N* (%)		
Male	113 (44.8)	85 (40.5)
Female	139 (55.2)	125 (59.5)
Age in years, mean $\pm$ S.D.	38.2 ± 13.5	39.4 ± 13.4
Positive family history, *N* (%)	64 (25.4)	52 (24.8)
Character before disease, *N* (%)		
Introverted	121 (48.0)	97 (46.2)
Extroverted	84 (33.3)	69 (32.8)
Middle	47 (18.7)	44 (21.0)
Clinical episode characteristics		
Course of disease, year	10.8 ± 10.5	11.6 ± 10.6
Age of onset, year	27.4 ± 10.4	27.8 ± 10.4
Duration of definite diagnosis, year	8.5 ± 9.6	9.0 ± 9.7
Frequency of hospitalization	3.1 ± 3.5	3.5 ± 3.7
Type of first episode, *N* (%)		
Manic	123 (48.8)	100 (47.6)
Depressive	128 (50.8)	109 (51.9)
Mixed	1 (0.4)	1 (0.5)
Current episode, *N* (%)		
Manic	180 (71.4)	151 (71.9)
Depressive	53 (21.0)	44 (21.0)
Mixed	19 (7.6)	15 (7.1)
Diagnostic classification types, *N* (%)		
Bipolar I	204 (81.0)	170 (81.0)
Bipolar II	48 (19.0)	40 (19.0)
Presence of psychotic symptoms, *N* (%)	104 (41.3)	88 (41.9)
Employment status		
Employed	120 (47.6)	98 (46.7)
Unemployed	132 (52.4)	112 (53.3)
CGI-BP, mean $\pm$ S.D.	1.7 ± 0.6	1.8 ± 0.5
GAF, mean $\pm$ S.D.	70.4 ± 8.6	72.5 ± 9.3
Medications[a]		
Medication type, mean $\pm$ S.D.	2.9 ± 0.8	2.9 ± 0.8
Atypical antipsychotics, *N* (%)	232 (92.1)	195 (92.9)
Risperidone	111 (44.0)	93 (44.3)
Olanzapine	58 (23.0)	47 (22.4)
Quetiapine	30 (11.9)	24 (11.4)
Typical antipsychotics, *N* (%)	7 (2.8)	4 (1.9)
Mood stabilizers, *N* (%)	247 (98.0)	207 (98.6)
Lithium	153 (60.7)	126 (60.0)
Valproate	140 (55.6)	122 (58.1)
Oxcarbazepine	18 (7.1)	18 (8.6)
Lamotrigine	19 (7.5)	15 (7.1)
Antidepressants, *N* (%)	29 (11.5)	23 (11.0)
Benzodiazepines, *N* (%)	102 (40.5)	86 (41.0)

CGI-BP: Clinical Global Impression scale for use in bipolar illness, GAF: Global Assessment of Functioning.

[a] Patients may have received more than 1 mediation type.