

Research report

Characteristics and psychosocial problems of patients with bipolar disorder at high risk for suicide attempt

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Abstract

Background: Bipolar disorder with a history of substance abuse or suicide attempt is a strong predictor of suicide. A high comorbidity of substance use disorders may obscure the specificity of findings about suicide behaviors in Western patients with bipolar disorder. *Methods:* The clinical data of Chinese bipolar patients (DSM-III-R) in Taiwan who had been naturalistically followed up for at least 15 years were obtained by a combination of chart reviews and interviews with patients and family members. The national identity numbers were used to search for deceased subjects. *Results:* There were 158 patients originally included for chart review; 4 of them died from suicide. A 9.9% lifetime prevalence of alcohol use disorders was found in 101 final subjects who accepting interview. Multiple logistic regression showed that subjects with a history of suicide attempt ($n = 53$, 52.5%) were more likely to have interpersonal problems with spouse or romantic partner (adjusted odds ratio = 2.85, 95% C.I. = 0.69–11.51), occupational problems mainly maladjustment and frequently changing job (adjusted odds ratio = 3.08, 95% C.I. = 1.12–10.49), and an earlier age (≤ 22 years) of onset (adjusted odds ratio = 0.96, 95% C.I. = 0.90–1.02). *Limitation:* To use an interview schedule for assessing the psychosocial problems of clinical population limits the interpretation and generalisability of the data. *Conclusion:* Despite low comorbidity of alcohol/drug use disorders in Chinese bipolar patients, a consistently high rate of suicide attempts reinforces that bipolar disorder is a high-risk group of suicide. An earlier age of onset, interpersonal problems with spouse or romantic partner, and occupational maladjustment rather than demographic characteristics may collectively identify those at high risk of suicide attempt in bipolar disorder. © 1999 Elsevier Science B.V. All rights reserved.

Keywords: Bipolar disorder; Chinese patients in Taiwan; Suicide risk; Psychosocial problems

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1. Introduction

Patients with bipolar disorder are known to be at high risk for suicide behaviors. Twenty-five to 60% of bipolar disorder patients who have attempted suicide at least once in their life time; 18.9% of deaths in bipolar patients are due to suicide (Goodwin and Jamison, 1990). The Epidemiologic Catchment Area (ECA) study showed that bipolar patients have a strong relationship to a history of suicide attempt relative to any other DSM-III-defined Axis I disorder (Chen and Dilsaver, 1996). Recent studies reinforce the association between the presence of mental disorders—in particular, mood disorders, substance use disorders, and antisocial disorders—and greater risk of a serious suicide attempt (Cheng, 1995; Beautrais et al., 1996). Goodwin and Jamison (1990) summarized the Western literature and estimated a 35% prevalence of alcohol use disorders among bipolar disorder patients. The ECA study reported that the bipolar disorder has a prevalence of any substance abuse or dependence of 60.7% (Regier et al., 1990). In addition, the higher rate of comorbid substance abuse may contribute to the higher rate of suicide attempts among bipolar disorder patients (Chen and Dilsaver, 1996).

Patients with a dual diagnosis of manic-depressive illness and substance abuse are at high risk of exacerbated mood symptoms and suicide (Goodwin and Jamison, 1990). Studies with reference to suicide in bipolar disorder find approximately one third of the suicide victims with a history of alcohol use disorders (Vieta et al., 1997; Isometsä et al., 1994, 1995; Strakowski et al., 1996). There are overlapping correlates and characteristics of bipolar individuals with suicidal behavior and ones with comorbid alcohol/drug use disorders, including more hospitalizations, a higher incidence of dysphoric mania, early onset of mood problems (Chen and Dilsaver, 1996; Isometsä et al., 1994, 1995; Sonne et al., 1994), poor psychosocial outcome (Kessler et al., 1997; Strakowski et al., 1996; Tohen et al., 1990), and vulnerability to significant medical morbidity (O'Connell et al., 1991; Vestergaard and Aagaard, 1991). Furthermore, alcohol/drug problems probably independently contribute to suicide ideation in affective patients with comorbid alcohol/drug use disorders (Pages et al., 1997). Nevertheless, to our knowledge, the existing

reports concerning suicide in bipolar patients all emerged from studies of Western patients. The impact of comorbid alcohol or drug use disorders may obscure the specificity of suicide-associated findings in bipolar disorder.

However, partially due to the high rate of deficiency in aldehyde dehydrogenase (ALDH-2) activity among the Chinese population in Taiwan, the comorbidity of alcohol/drug use disorders in Chinese patients with bipolar disorder is merely 10% and considerably lower than that of any Western report (Tsai et al., 1996). Furthermore, despite a 9.9% life time prevalence of alcohol use disorders, the long-term psychosocial outcome in Chinese bipolar patients is comparable to that of Western patients (Tsai et al., 1997). Therefore, to investigate the suicide-associated issues among Chinese bipolar patients may avoid being influenced by substance abuse, mainly alcohol use problems.

Though it is not possible to predict suicide even among a high risk group (Goldstein et al., 1991), a prior suicide attempt is still one of well established predictors for complete suicide in mood disorders (Nordström et al., 1995). The bipolar patients with a history of suicide attempt could be looked as a particularly high risk group of suicide. Late suicides are common in bipolar disorder victims as suggested by a mean of 14.4 years from the first psychiatric contact to the time of suicide (Isometsä et al., 1994). In addition, the risk of a suicide attempt does not decline in the course of bipolar disorder (Ahrens et al., 1995). Therefore, a study of suicide attempt in bipolar patients should have adequate duration of following up for their suicidal outcome to emerge. Moreover, the consequent psychosocial impairment of bipolar disorder extends to all areas of functioning and persists for years, even among individuals without clinical symptoms (Coryell et al., 1993). The role of psychosocial problems in suicide risk of bipolar patients should be examined during the long-term following up.

Taken together, the present study was designed to provide a comparison between Chinese bipolar patients been treated for more than 15 years with and without a history of suicide attempt. To prevent suicide in bipolar disorder, the aim of this study is to elucidate the characteristics and psychosocial problems that might identify the high-risk group of

suicide attempt among clinical population with bipolar disorder.

2. Methods

The study was part of a naturalistic follow-up study of bipolar disorder in Taiwan which was carried out between 1995 and 1996. Patients were eligible for inclusion in the study if they met the DSM-III-R (APA, American Psychiatric Association, 1987) diagnostic criteria for bipolar disorder. All subjects were recruited from the Taipei City Psychiatric Center—a psychiatric teaching hospital providing comprehensive psychiatric services and assigned as a center for the northern Taiwan catchment region.

There were originally 158 patients selected to review charts for research purpose based on the following criteria: (1) they had been treated, from the first contact to the last, for more than 15 years; and (2) they had to have at least 30 follow-up visits at the hospital in the past 15 years. Written consent for participation in the survey was given by every subject. For each patient in the study a parallel interview was conducted with a reliable family member for confirmation of the clinical data. The national identity (ID) number is unique for each resident of Taiwan. Among those failing to be in touch, we searched for deceased subjects by matching national IDs with computerized data files from the Department of Health, Death Certification System in Taiwan issued for the years till 1996.

The methodology as well as the semi-structural interview instrument, the Psychiatrist Diagnostic Assessment (PDA) (Hwu and Yang, 1988), used in the study has been described extensively elsewhere (Tsai et al., 1997). All patients were evaluated by the author (S.Y. Tsai) using PDA to recognize the DSM-III-R-defined disorders and psychosocial problems. Basing on the statements of patient and reliable family member, psychosocial problems actually occurring during the year before the in person interview for study was determined. Thus, the psychosocial problems might be quite remote to the time of the attempt(s). According to the instruction of DSM-IV (APA, American Psychiatric Association, 1994), the psychosocial problems may be a negative life

event, an environmental difficulty or deficiency, an interpersonal stress, an inadequacy of social support, or other problem relating to the context in which person's difficulties have developed. The psychosocial problems of the PDA are classified into the following categories with kappa values > 0.8 : interpersonal problems, economic troubles, occupational problems, legal troubles, problems or changes of family life, physical illness, and other problems. Multiple psychosocial problems were assigned when appropriate.

Significant physical illness of each patient was extracted if it is potentially life-threatening without regular follow-up. The Global Assessment of Functioning Scale (GAF) (APA, American Psychiatric Association, 1994) was also used to rate the highest level of relational functioning for at least 6 months during the last year before the time of evaluation. Social class was rated according to the Hollingshead-Redlich Index of Social Position (Hollingshead and Redlich, 1958).

Suicide attempt is defined, according to clinical judgment, as inflicted self-harm with some intent to die. Two-group comparisons, between subjects with and without a suicide attempt, were made by using the chi-square test with Yates' correction or Fisher's exact test when explanatory variables were categorical; the Wilcoxon's rank-sum test or two-tailed t test for continuous variables. Relationships between demographic and other variables were compared using Spearman's rank correlation or Pearson product moment correlation when appropriate. Furthermore, a multivariate analysis (multiple logistic regression equation fitted through a step-wise variable selection procedure) was performed using the SAS software on the grounds of statistical significance ($p < 0.05$) in independent variables shown in the Table 1. Odds ratios and 95% confidence intervals for the independent variables were derived. The logistic model with the best goodness of fit was selected.

3. Results

Of the 158 patients that underwent a retrospective chart review – the original subjects with mean 19.1 years from the first visit for treatment to chart

Table 1
Characteristics of bipolar disorder patients with and without suicide attempt

	Suicide attempter <i>n</i> = 53	Non-attempter <i>n</i> = 48	Total <i>n</i> = 101
Categorical variables			
Male	20 (37.7%)	16 (33.3%)	36 (35.6%)
Marital status			
never married	16 (30.2%)	13 (27.1%)	29 (28.6%)
married/widow	33 (62.3%)	27 (56.3%)	60 (59.4%)
divorced/separated	4 (7.5%)	8 (16.7%)	12 (11.9%)
Education \geq 9 years	31 (58.5%)	24 (50.0%)	55 (54.5%)
Unemployed	8 (15.1%)	6 (12.5%)	14 (13.8%)
IV or V socioeconomic class	43 (81.1%)	38 (79.1%)	81 (80.2%)
Living alone	4 (7.5%)	1 (2.1%)	5 (4.9%)
History of rapid cycling	10 (18.9%)	5 (10.4%)	15 (14.9%)
Co-existing physical illness	28 (52.8%)	17 (35.4%)	45 (44.6%)
Alcohol use disorders	5 (9.4%)	5 (10.4%)	10 (9.9%)
Family disruption before 15 year-old	11 (20.8%)	6 (12.5%)	17 (16.8%)
Interpersonal problems*	11 (20.8%)	3 (6.3%)	14 (13.9%)
Occupational problems**	14 (26.4%)	4 (8.3%)	18 (17.8%)
Early age of onset (\leq 22 years) ***	38 (71.7%)	23 (47.9%)	61 (60.4%)
Continuous variables			
Mean numbers of episodes (\pm SD) ^a	6.6 (3.9)	9.0 (4.9)	7.7 (4.5)
Mean age (\pm SD) (years)	43.9 (10.8)	45.7 (9.7)	44.7 (10.3)
Mean months of lithium treatment (\pm SD) ^b	108.7 (70.6)	80.8 (69.4)	94.8 (71.0)
Mean GAF (\pm SD)	63.8 (13.0)	67.3 (12.0)	64.1 (13.1)

* Fisher's exact test, $p < 0.05$.

** Fisher's exact test, $p < 0.025$.

*** $X^2 = 5.00$, $df = 1$, $p < 0.05$, with Yates' correction.

^a Two-tailed $t = 1.76$, $p < 0.1$.

^b Wilcoxon test: $z = 1.56$, $p = 0.1$.

screening for this study – 60 (38.0%) were men and 98 (62.0%) were women (mean age = 45.3 ± 10.7 years). The demographic data of these patients on screening showed that 64 patients (40.5%) were unmarried or divorced, 68 patients (43.0%) had less than 9 years of education, and 112 patients (70.9%) rated in the lower socioeconomic classes (Hollingshead's class IV or V). All chart information revealed that 68 patients (43.0%) had previously attempted suicide. Ten patients were dead prior to our evaluation for study. Three male and one female patients died from completed suicide, and three (75%) of them had a prior suicide attempt. At the time of completed suicide, the patients were 35 to 51 (mean = 43.0) years old. Together, 101 patients were interviewed and became the final subjects. Reasons why the research interviews were unavailable in 47 original subjects included: failing to contact the patient as result of changes in address and telephone

($n = 42$), being refused by patient ($n = 3$) or unwilling family member ($n = 2$).

The 101 final subjects included 36 men (35.6%) and 65 women (64.4%). The mean age at onset of the bipolar illness was 22.7 years ($SD = 8$). There were 52.5% of final subjects (20 men and 33 women) having at least one prior suicide attempt; it showed that approximately equal rates in male (55.6%) and female (50.8%) patients attempted suicide. Although nearly one third of original subjects failed to interview for the study, there was no difference in the demographic data (Table 1) or rate of suicide attempt between the original and the final subjects.

Though a methamphetamine abuse era has spread through Taiwan since the late 1980s, no amphetamine abuser was found in the probands. Neither marijuana nor other illegal drug abuser was found. After interviewing the 101 subjects, 12 (11.9%)

patients were found to have alcohol problems during their illness: seven met DSM-III-R criteria for alcohol abuse, three alcohol dependence, and two just temporally increased alcohol consumption during their affective episodes. However, three had completely abstained from alcohol in the period of study. Therefore, the lifetime prevalence of alcohol abuse was 6.9%, and alcohol dependence 3.0% in the subjects.

At the first occurrence of suicide attempt in the 53 attempters, the mean age was 29.5 years ($SD = 14.5$) and almost all (94.4%) of them lived with family. In addition, there were 26 patients (49.1%) married at the first suicide attempt. The mean number of years between illness onset and the first suicide attempt was 9.5 ($SD = 8.4$). Eighteen subjects (33.9%) attempted the first suicide within the 5 years of illness, seven patients (13.2%) within 5 to 10 years of illness. Among the attempters, the first suicide attempt took place in 20 patients (37.6%) while on regular psychotropic medication, mainly lithium prophylaxis. Most of the suicide attempters used the less immediately fatal methods at the first time, including drug/poison (30.2%), cutting/knife stabbing (22.7%), drowning (7.5%), inhaling gas (5.7%), and others. Seven patients (13.2%) used more violent methods including jumping from high place and deliberate automobile wreck. Twenty three (43.4%) of the suicide attempters had another suicide attempt with a mean interval of 6.3 ± 5.7 years from the first attempt.

All the subjects were divided into suicide and non-suicide attempter groups. The female-to-male ratio of suicide attempters was 1.65. The mean age at onset of bipolar illness for suicide attempters and non-attempters were 21.4 ± 8.1 years and 24.1 ± 8.5 years, respectively ($t = 1.63$, $p = 0.1$). Comparison of the two groups (Table 1) revealed no significant difference in age, education, socioeconomic level, marital status, living condition, comorbid alcohol use disorders, number of episode, and length of lithium treatment. There were more suicide attempters raised in a disrupted family, experiencing rapid cycling, having physical illness, and having a low mean GAF than the non-attempters. However, these results did not reach statistical significance. No correlation to suicide attempt was found with demographic variables, alcohol use disorders or rapid cycling. Multi-

ple logistic regression showed that suicide attempters were more likely to have interpersonal problems (all with spouse or romantic partner) (adjusted odds ratio = 2.85, 95% C.I. = 0.69–11.51), occupational problems (mainly maladjustment and frequently changing job) (adjusted odds ratio = 3.08, 95% C.I. = 1.12–10.49), and an earlier age of onset (cut-off point = 22 years of age) (adjusted odds ratio = 0.96, 95% C.I. = 0.90–1.02). The goodness-of-fit statistic among the three variables in this model examined with Hosmer–Lemeshow statistic is 1.7736 ($df = 8$, $p = 0.9872$) and represents good predictability for suicide attempt.

4. Discussion

Suicide behaviors range from suicidal ideation to completely fatal acts. Although the discrepancy between those who attempt suicide and those who actually commit suicide is less important in manic-depressive patients (Goodwin and Jamison, 1990), it has been argued that individuals who complete attempts differ from those who attempt but survive (Linehan et al., 1986). Thus, the four completed suicide victims were not included for analysis, despite three of them having a history of prior suicide attempt. Suicide attempts in the early course of recurrent affective disorders may provide a ‘cathartic effect’ which leads to a lower risk in the later course of the illness (Ahrens et al., 1995). The first suicide attempt occurred within the first 5 years of illness in one third of the attempters. Thus, we are aware that the study population did not consist of homogeneously suicide risk patients.

Of the suicide attempters in the present study, 45.4% having more than one suicide attempt in life time lies within the range 41% to 50% that are reported in surveys from clinical populations with bipolar disorder (Ahrens et al., 1995; Vieta et al., 1997). The female-to-male ratio for suicide attempt is consistent with the estimates from 1.4:1.0 to 4.0:1.0 (Diekstra, 1993). Additionally, it has been observed that the psychosocial outcome (marriage, work, and social adjustment) of the subjects is similar to that of the Western patients (Tsai et al., 1997). Thus, this study population might represent a

group of bipolar patients commonly seen by clinicians elsewhere.

The 52.5% of our final subjects having suicide attempt(s) is similar to the 48.4% rate of suicide attempt in bipolar individuals with a 71% comorbidity of substance use disorders from a general population survey (Kessler et al., 1997) and within the 20% to 60% suicide attempt rates reported in 13 clinical studies (Goodwin and Jamison, 1990). We did not find any difference in comorbidity of alcohol use disorders between attempters and non-attempters. Moreover, despite a lower prevalence of alcohol use disorders in these Chinese bipolar subjects, some clinical data of the suicide attempters including age at onset of bipolar illness, age at first parasuicide, and duration of lithium treatment were similar to those of a comparable Western bipolar group receiving long-term lithium prophylaxis (Müller-Oerlinghausen et al., 1992). Thus, consistently high suicide attempt rate in non-Western patients may be additional evidence supporting that bipolar disorder itself is a contributing factor for suicide behaviors (Chen and Dilsaver, 1996; Goldstein et al., 1991).

Our major finding was that an earlier age (less than 22 years) of onset, interpersonal problems with spouse or romantic partner, and occupational problems (mainly maladjustment along with frequently changing job) collectively discriminated the suicide attempter from the non-attempter in bipolar disorder. An earlier age of onset is a correlate repeatedly mentioned in the literature concerning the predictors for suicide behavior in bipolar disorder (Ahrens et al., 1995; Chen and Dilsaver, 1996; Sharma and Markar, 1994). With respect to other clinical features, neither the history of rapid cycling nor the number of episodes was relevant as an independent factor for suicide attempt in our study. This result agrees with that of Wu and Dunner (1993), who reported that rapid cyclers of bipolar disorder did not differ in the history of suicide attempts from non-rapid cyclers. Symptomatic components, especially depression in bipolar illness, are related to suicide behavior but not evaluated in our study (Dilsaver et al., 1994; Strakowski et al., 1996). It would be worth investigating the cross-sectionally clinical characteristics at the time of suicide attempt for preventive measures.

Goldstein et al. (1991) suggest that it is not

possible to predict suicide among affective patients based on demographic and clinical data; other factors, such as adverse life events, also need to be examined. In the present study, the interpersonal problems with spouse or romantic partner and occupational problems, but not sociodemographic characteristics including gender, marital status, unemployment, and socioeconomic level, may identify the risk group of suicide attempt in bipolar disorder. Furthermore, the psychosocial problems of suicide attempters is in accordance with the recent stressors of bipolar suicide victims which are commonly dependent on the patient's behavior, e.g., separation, substantial financial deterioration or job problems (Isometsä et al., 1995). Both affective episodes and substance use disorders are known to have adverse impact on the family life, social networks, and psychosocial outcome of patients (Coryell et al., 1993; Romans and McPherson, 1992; Tohen et al., 1990; O'Connell et al., 1991; Sonne et al., 1994). The major strength of this study is that the lower proportion of Chinese bipolar patients with alcohol/drug use problems reduces the confounding effect of substance abuse on the analysis of behavioral outcome. Accordingly, the interpersonal problems as well as occupational maladjustment may be the adverse consequence of affective illness.

In terms of the relations between suicide and marital status, most of studies focus on the divorce or separation and are more likely to neglect a considerable proportion of bipolar patients who are never married but have relational problems with romantic partner. In addition, marital status is noted to fail to predict higher suicide risk in major affective disorders (Dilsaver et al., 1994; Fawcett et al., 1987; Isometsä et al., 1994). On the other hand, although living with others and getting married represent social integration and are preventive factors for suicide, our results revealed that almost all attempter lived with family member and half of them were married at the first occurrence of suicide attempt. Compared with Western studies of bipolar disorder, our subjects had a similar proportion of being unmarried, yet a relatively low number of them lived alone (Isometsä et al., 1994; Sharma and Markar, 1994; Runeson et al., 1996). Therefore, the interethnic difference between Chinese and Western societies should be considered in a suicide study as

to psychosocial aspects. Moreover, we suggest that psychosocial problems rather than demographic characteristics should be taken into account when assessing the risk of suicide in bipolar individuals.

However, several limitations exist in the study. Firstly, this is a naturalistic follow-up study with a clinical population. The results may not represent the actual prevalence of substance use disorders, the rate of complete or incomplete suicide in bipolar disorder. Secondly, the inclusion criteria, a 15-or-more-year follow-up, made our subjects have a larger mean age. Thus, a portion of bipolar patients with less than 15 years of illness or committing a fatal suicide in the early course of the illness were neglected in this study. Hence, the generalisability of the results may be questionable. Thirdly, the validity of information on the history of suicide behavior and substance use problems is an important measurement issue in this study. Some of our subjects probably minimized their problems of substance use and their 'true' intent to commit suicide. Finally, the categories of grouping psychosocial problems in the PDA are similar to those of Rich et al. (1988). Moreover, the anticipated or imagined events were excluded and information on actual events was collected from patients and their family members. Yet, even so, there are methodological shortcomings to the use of fixed interview schedules for the assessment of psychosocial problems, such as possible errors in recalling or the recent symptoms influencing levels of psychosocial problems.

To conclude, interpersonal problems with spouse or romantic partner, occupational problems especially maladjustment, and an earlier age of onset may collectively identify those at high risk of suicide attempt among persons with bipolar disorder. Although it would be unrealistic to use the set of clinical features to accurately predict suicide, we propose that bipolar disorder is a high risk group of suicide and the adverse psychosocial consequences of earlier onset illness need closely monitoring.

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