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Research report

Alcohol problems and long-term psychosocial outcome in Chinese patients with bipolar disorder

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Abstract

Background: A high comorbidity of alcohol use disorders among Western bipolar patients is recognized and worsens the outcome of bipolar illness. In view of lower prevalence of alcohol use disorders in some Asian groups, we attempted to investigate the alcohol problems among Chinese bipolar patients in Taiwan. *Methods:* The clinical data of bipolar patients (DSM–III–R) having been followed-up naturally for at least 15 years were obtained by a combination of chart reviews and interviews with patients and family members. *Results:* Based on a retrospective chart review of 158 patients, 8.2% of them were found to have alcohol problems. The lifetime prevalence of alcohol abuse was 6.9%, and of alcohol dependence 3.0% among 101 subjects accepting interview. According to the Global Assessment of Functioning Scale (APA, 1994) nearly one-third of them were clearly dysfunctional. *Limitation:* As subjects had a greater mean age, the age-related effects probably worsened the psychosocial outcome and reduced the incidence of new substance abuse. *Conclusion:* Chinese bipolar patients, despite a lower comorbidity of alcohol use disorders, do not have a more favorable long-term psychosocial outcome (marriage, work, and social adjustment) than Western patients. © 1997 Elsevier Science B.V.

Keywords: Bipolar disorder; Comorbid alcohol use disorders; Chinese population in Taiwan; Long-term psychosocial outcome

1. Introduction

A number of recent investigations with various length of follow-up have found that 40%–60% of manic patients treated under routine conditions experience considerable difficulties after hospitalization, including frequent relapse and impaired psychosocial functioning (Harrow et al., 1990; O'Connell et al., 1991; Goldberg et al., 1995). A 5-year prospective study revealed that aggressive pharmacological maintenance treatment does not prevent a poor outcome in a significant number of bipolar patients (Gitlin et al., 1995). Tsuang et al. (1979) found that nearly one-third of manic patients with 30-year

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follow-up demonstrated poor work performance and adjustment in other areas. Previous observers also noted that with bipolar disorder, psychosocial outcome is often worse than syndrome outcome (Goodwin and Jamison, 1990; Coryell et al., 1993). Thus, assessment of the long-term outcome should be concerned with the psychosocial functioning.

A history of alcoholism has been suggested to be a predictor of poor long-term psychosocial outcome for manic patients (Tohen et al., 1990). It is well established that alcoholic bipolar patients are more vulnerable than non-alcoholics to attempt suicide, be hospitalized, and have psychosocial problems (Tohen et al., 1990; O'Connell et al., 1991; Sonne et al., 1994). However, alcoholics without comorbid mood disorder might also have such an outcome. The Epidemiologic Catchment Area Study (ECA) (Regier et al., 1990) revealed that bipolar disorder is associated with the highest risk of any axis I disorder for coexistence with alcohol abuse. The likelihood (odds ratio) of an individual with bipolar disorder having alcohol use disorders is 6.2 times greater than that of the general U.S. population (Helzer and Pryzbeck, 1988). Goodwin and Jamison (1990) summarized the existing literature and estimated a 35% prevalence of alcohol abuse and alcoholism among bipolar disorder patients. During the course of the bipolar disorder, alcoholism may be a secondary complication (Winokur et al., 1995), a reflection of some aspects of the clinical state, an index of demoralization, or a sign of social deterioration (Tohen et al., 1990). Thus, the effects of alcohol or other substance abuse vary the actual prognosis of bipolar disorder (Brady and Sonne, 1995; Feinman and Dunner, 1996).

That alcoholism is lower among the Han Chinese and some Asian groups than among Caucasians is, at least partially, due to the high rate of a genetically determined deficiency in aldehyde dehydrogenase (ALDH–2) activity. The deficiency rate for ALDH–2 in the Taiwan Han Chinese population is 50% (Chen et al., 1991). With this biologically protective mechanism, we speculated that the rate of comorbid alcohol use disorders among Chinese bipolar patients would not be as high as among Western bipolar patients. The aim of this study was to investigate the coexistence of substance use problems, particularly alcohol, among Chinese bipolar patients in Taiwan. The questions to be addressed were as follows:

1. What is the lifetime prevalence of alcohol abuse/dependence among Chinese bipolar patients?
2. It is postulated that the comorbidity of alcohol use disorders in Chinese bipolar patients is less than that in Western patients. How favorable is the long-term psychosocial outcome of Chinese bipolar patients with modern treatment under routine conditions?
3. What are the differences in the long-term psychosocial outcome between alcoholic and non-alcoholic bipolar patients?

2. Method

A naturalistic study was carried out between 1995 and 1996. All the subjects were collected 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. Guidelines for treatment decisions in bipolar disorder were made previously at the hospital. Lithium was routinely administered to patients when bipolar disorder had been definitely diagnosed. The serum lithium level was regularly monitored and maintained between 0.5–0.8 meq/l for prophylactic efficacy. Other mood stabilizers (carbamazepine and valproic acid) were available and prescribed alone or with lithium whenever clinically indicated.

Patients were eligible for inclusion in the study if they met the DSM–III–R (American Psychiatric Association, APA, 1987) diagnostic criteria for bipolar disorder with a duration for treatment, from the first contact to the last, of more than 15 years. A total of 197 patients satisfied the inclusion criteria. To obtain adequate follow-up data, all subjects in the study had to have at least thirty follow-up visits at the hospital in the past 15 years. Thus, 39 patients were excluded and the rest (158) patients were eligible for the study. Patients and their families were informed to review the chart and then interviews were arranged for research purposes. Written consents for participation in the survey were given by all patients.

All patients were evaluated by the author (S.Y. Tsai) using a semi-structural and well-validated schedule, the Psychiatrist Diagnostic Assessment (PDA) (Hwu and Yang, 1988), to recognize the cases

of alcohol or substance use disorders. Based on the criteria of DSM–III, the PDA was designed for the Chinese-speaking psychiatrists to make a diagnosis in clinical practice and research. The inter-rater reliability estimates for lifetime occurrence of bipolar disorder 0.93 and for alcohol/drug use disorders 1.00, suggesting excellent agreement for specific diagnostic category. The PDA has also been proven to have satisfying validity for a diagnosis of substance or alcohol use disorders according to DSM–III–R criteria. One hundred and one patients accepted an interview for investigation and became the final subjects. Clinical data for each subject had to be confirmed by a reliable family member, including occupation, marital status, residence, history of suicide attempt, substance use, and the order of onset of substance abuse and bipolar disorder. The final diagnosis for alcohol/substance use disorders was made in this study via the DSM–III–R criteria. Rapid cycling was defined as four or more affective episodes (depressions lasting at least 2 weeks; hypomanias 4 days; and manias 1 week) in 1 year.

Severe or chronic medical illness is associated with a sensation of well-being and the psychosocial outcome. Therefore, significant medical illness should be considered and extracted if it is potentially life-threatening without regular follow-up, including hypertension, diabetes mellitus, cardiovascular disease, peptic ulcer, asthma, chronic obstructive pulmonary disease, cancer, stroke, thyroid dysfunction, epilepsy, renal insufficiency, and chronic liver disease.

The psychosocial outcome during the previous 6 months was evaluated by the community life scale of the Community Psychiatric Rating Scale (CPRS) (Hwu et al., 1987), which was originally designed to evaluate the status of patients living in the Taipei metropolitan area for the purpose of social psychiatry. The community life scale was successfully used in an outcome study (Hwu et al., 1995b), covering five dimensions of psychosocial function: interpersonal relationships, achievement (job, household, schooling), time management, family life, and personality adjustment. Each item is rated from 0 to 6 and a score of 3 is considered as fair. The total score range is from 0 to 30 and higher scores indicate better functioning. The Global Assessment of Functioning Scale (GAF) (APA, 1994) was also used to rate the highest level of relational functioning for at least 6 months during the last year. Social class was rated according to the Hollingshead-Redlich Index of Social Position (Hollingshead and Redlich, 1958).

Tests for statistically significant difference between alcoholic and non-alcoholic groups included the χ^2 test or Fisher's exact test when explanatory variables were categorical and Wilcoxon rank sum test for continuous variables. Relationships between demographic and other variables were compared using Spearman's rank correlation.

3. Results

There were a total of 60 (38.0%) men and 98 (62.0%) women (mean age, 45.3±10.7 years) in the original subjects. The demographic data from chart reviews of these 158 patients 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 13 patients (8.2%) had alcohol use problems, 68 patients (43.0%) had previously attempted suicide, and 19 patients (12.0%) had a history of rapid cycling during the illness.

Of the 101 patients who accepted interviews, 6 were day-care unit patients, 4 were chronic rehabilitation inpatients, and 91 were out-patients during the year of study. Sixty five (64.4%) final subjects were women and 36 (35.6%) were men. Eighty four (83.2%) lived with their family or friends. The mean age was 44.7 years (range 33–70 years, S.D. = 10.3). The marital status of 45 (44.6%) patients were not good, including never having been married, divorced, or separated; 80.2% were rated as belonging to the lower social classes (Hollingshead's class IV or V). There were no significant differences in demographic characteristics between the original and final subjects. The mean GAF was 64.1 (S.D. = 13.7), corresponding to "some mild symptoms or some difficulty in social, occupational, or school functioning, but generally functioning pretty well" (APA, 1994). There were 33 patients (32.7%) with a GAF below 60 which is rated as "clearly dysfunctional, unsatisfying relationships tend to predominate" and considered to have impaired psychosocial function. There were 17 patients (16.8%) definitely

identified with a poor outcome with the GAF below 50 (O'Connell et al., 1991). According to the community life scale of CPRS, 30 patients (29.8%) were clearly identified as having a poor working function.

Though amphetamine use has spread in Taiwan since the late 1980s, no amphetamine abuser was found among the probands. In addition, neither marijuana nor heroin abusers were found. After interviewing the 101 subjects, 12 patients (11.9%) were found to have alcohol problems during their illness: seven patients met DSM–III–R criteria for alcohol abuse, three patients for alcohol dependence, and two patients showed just a temporary increase in alcohol consumption during their affective episodes. However, three patients completely abstained from drinking before the period of study. Furthermore, only one patient could be so called "secondary bipolar": the bipolar disorder beginning after the onset of alcohol abuse (Feinman and Dunner, 1996). Therefore, the lifetime prevalence of alcohol abuse was 6.9%, and of alcohol dependence 3.0% among the final subjects.

All final subjects were classified into alcoholic and non-alcoholic groups. Table 1 lists the demographic differences between the two groups. Comparison of demographic data revealed that a higher proportion of men (22.2%) had comorbid alcohol use disorders than women (3.1%) which was statistically significant (Fisher's exact test, 2-tail, $P < 0.02$). The two groups did not significantly differ in terms of age, educational level, socioeconomic class, or marital status, whereas all the alcoholic patients were rated in the lower socioeconomic classes (Hollingshead's class IV or V). The alcoholic group had lower mean scores of both GAF and community life scale than non-alcoholics, but there was no statistically significant difference.

The clinical features are shown in Table 2. The clinical data about history of suicide attempt or rapid

Table 1
Demographic characteristics of bipolar patients with or without comorbid alcohol use disorders

	Alcoholics ($N = 10$) $N(\%)$	Non-alcoholics ($N = 91$) $N(\%)$	Total ($N = 101$) $N(\%)$
Sex ratio (M/F)[a]	8/2	28/63	36/65
Age (years)	43.1±9.7	44.9±10.4	44.7±10.3
Marital status			
Married; widowed	5 (50)	51 (53.9)	56 (55.4)
Never married	4 (40)	28 (30.7)	32 (31.7)
Separated; divorced	1 (10)	12 (13.2)	13 (12.9)
Years of education:			
≤9	7 (70)	39 (42.8)	46 (45.5)
>9	3 (30)	52 (57.1)	55 (54.5)
Occupational status			
Employed or skilled housewife	3 (30)	36 (39.6)	39 (38.6)
Socioeconomic status:			
II	0	4 (4.4)	4 (4.0)
III	0	16 (17.6)	16 (15.8)
IV	1 (10)	8 (8.8)	9 (8.9)
V	9 (90)	63 (69.2)	72 (71.3)
Mean community life scale score	13.6±8.5	15.8±7.4	15.5±7.5
Mean GAF	62.2±13.8	64.3±12.9	64.1±13.1

[a] Fisher's exact test, $P < 0.02$.

Table 2
Clinical features of bipolar patients with or without comorbid alcohol use disorders

	Alcoholics ($N = 10$) $N(\%)$	Non-alcoholics ($N = 91$) $N(\%)$	Total ($N = 101$) $N(\%)$
Average age of onset (years)	22.8±8.8	22.6±8.4	22.7±8.4
1st episode with psychotic features	6 (60)	44 (47.6)	50 (49.6)
Mean number of previous admissions	4.6±2.5	3.8±2.6	3.9±2.6
Residual symptoms	4 (40)	25 (27.5)	29 (28.7)
Physical illnesses	2 (20)	35 (38.5)	37 (36.7)
Poor medical compliance	3 (30)	22 (24.1)	25 (24.7)
History of rapid cycling[a]	4 (40)	10 (10.9)	14 (13.9)
Suicide attempt	5 (50)	48 (52.7)	53 (52.5)

[a] Fisher's exact test, $P < 0.002$.

cycling obtained from interviews were comparable to those collected from chart reviews. With respect to psychopathological outcome (i.e., psychotic features in the first episode, residual symptoms, and mean number of hospitalizations), the alcoholic group (Table 2) only had a significantly greater percentage of rapid cyclers (Fisher's exact test, 2-tail, $P < 0.002$). No correlation was observed between gender and rapid cyclers (correlation coefficient = 0.085, $P = 0.401$).

4. Discussion

Alcohol and stimulants appear to be the most common agents of abuse in the bipolar patient population (Brady and Lydiard, 1992), yet no psychostimulant abuser was found among our subjects. A high comorbidity (18% to 31%) of alcoholism in bipolar disorder has been found from Western studies on individuals seeking treatment for bipolar disorder (Brady and Sonne, 1995). However, based on the results of chart reviews, we found only 8.2% of Chinese bipolar patients had had alcohol problems during 15-or-more years of illness. Furthermore, results of interviews showed that the lifetime prevalence of alcohol abuse/dependence among help-seeking bipolar patients was 9.9%, including alcohol abuse 6.9% and alcohol dependence 3.0%. According to a Chinese community-based study performed in Taiwan during 1982–1986, the lifetime prevalence of alcohol use disorders as defined by the DSM-III criteria was 7.5%: alcohol abuse was ranged from 3.4% to 8.0% and alcohol dependence from 1.2% to 1.8% (Hwu et al., 1995a). In addition, the lifetime prevalence of alcohol abuse was noticeably higher than that of alcohol dependence among Chinese bipolar patients as well as the community samples in Taiwan and other Oriental countries. This finding is opposite to that found in Western countries both among the general population (Yeh et al., 1989) and among bipolar patients (Brady and Lydiard, 1992). Thus, our results demonstrate that the prevalence of alcohol problems among Chinese bipolar patients is quite similar to that of the Chinese population in Taiwan and remarkably lower than that reported for Western bipolar patients (Regier et al., 1990; O'Connell et al., 1991; Brady and Lydiard, 1992; Feinman and Dunner, 1996). Hwu et al. (1995a) suggested that the biological protective response to acetylaldehyde is a significantly aetiological factor for alcohol abuse/dependence in the Chinese population. A 56% prevalence of ALDH-2 deficiency in Chinese affective disorder patients, mostly bipolar disorder (Yang et al., 1996), is found and as high as that of Orientals, whereas most of the Caucasian or Negroid population do not show this isoenzyme abnormality (Agarwal and Goedde, 1992). Thus, our results suppose that the genetically-determined deficiency in ALDH activity also protects Chinese bipolar patients from alcohol abuse.

Taking the gender difference into account, the high ratio of female subjects in the study might reduce the prevalence of alcohol problems. On the contrary, Berkson's bias possibly over-estimated the prevalence of alcohol use disorders (i.e., an increased tendency for patients with comorbid alcoholism to seek treatment and thus fall into study populations

drawn from clinical sources). In addition, the survey among subjects with a greater mean age probably led to collect the patient who ever abused alcohol but currently abstained from it. Although we failed to interview a portion of the original subjects, there were no differences found in the demographic and clinical data between the retrospective and interview results. These biases limited us to find out the accurate prevalence of alcohol use disorders; nevertheless, both the retrospective data and results from interviews showed that Chinese bipolar patients are less vulnerable to alcohol abuse than the Western patients.

When analyzing the overall outcome, the psychopathological outcome (the presence of affective symptoms, or psychotic features) and the psychosocial function are the major areas involved. The psychosocial impairment associated with bipolar disorder extends to essentially all areas of functioning and persists for years, even among individuals who experience sustained resolution of symptoms (Coryell et al., 1993). The association between the overall social maladjustment and residual symptoms of bipolar disorder remains unclear (Bauwens et al., 1991). Thus, although over one-fourth of our patients suffered from residual affective symptoms during the 6 months prior to assessment, symptomatic chronicity was regarded as naturalistically clinical manifestations in this study.

The reported incidence of bipolar patients with sustained functional impairment varies from 15% to 53% (Welner et al., 1977). Different aspects of psychosocial outcome should be assessed with respects to various clinical variables. According to the GAF, nearly one-third of our subjects were clearly dysfunctional and one-sixth definitely rated as poor outcome. This finding is similar to that described in a report on outpatients with a larger mean age among whom 23% were rated as substance abusers (O'Connell et al., 1991).

Generally, being married and being employed are associated with the development of good social relationships. Nevertheless, an increased rate of marital failure has been noted among bipolar disorder patients even when euthymic (Romans and McPherson, 1992). We found that approximately half of our subjects experienced marriage problems similar to that of a Feinman and Dunner (1996) study, whose subjects had a 46% prevalence of substance use disorders with a similar mean age and sampling source to our subjects. Although the outcome might improve over time, about 30% of subjects had a definitely impaired occupational functioning after at least 15 years of illness. Our rate of occupational dysfunction was similar to a naturalistic study which reported 23% of manic patients as having been continuously unemployed (Harrow et al., 1990) and also to that of a 30-year follow-up study showing one-third of manic patients with poor work performance and adjustment in other areas (Tsuang et al., 1979).

In terms of psychosocial outcome, comparison with previous studies is difficult due to methodological inconsistency. Based on the GAF, social class, marital status, and work functioning, the present data revealed that a considerable percentage of bipolar patients having been naturalisticly followed for more than 15 years showed definitely psychosocial dysfunction. Our data supported the finding in a longitudinal study (Goldberg et al., 1995) that a subgroup approaching 60% of bipolar disorder still experience poor posthospital adjustment in one or more areas of functioning. Furthermore, more than two-thirds of our subjects were identified as belonging to the lower socioeconomic classes. Our findings suggest that Chinese bipolar patients, despite a lower comorbidity of alcohol use disorders, do not have a more favorable long-term psychosocial outcome than Western patients under naturalistic follow-up conditions.

The impact of alcohol or drug abuse on psychosocial outcome was examined by comparing alcoholic and nonalcoholic groups in this study. A significantly greater percentage of rapid cyclers among the alcoholic group was noted. With respect to psychopathological outcome, our results were consistent with previous studies reporting that individuals with bipolar disorder complicated by substance abuse had a worse prognosis (Tohen et al., 1990; O'Connell et al., 1991; Sonne et al., 1994; Feinman and Dunner, 1996). However, there was no difference between alcoholic and nonalcoholic groups as regards psychosocial outcome variables. Without distinguishing between patients whose bipolar disorder began prior to or after the onset of alcohol abuse, alcoholism was suggested to be a

predictor of poor psychosocial outcome (Harrow et al., 1990; Tohen et al., 1990). Such finding is thus discordant with that from our study.

That our data failed to indicate the impact of alcohol use disorders on psychosocial outcome might be due to few cases of alcoholism found among our subjects. In addition, according to Feinman and Dunner (1996) definition, our alcoholic group consisted of only one patient identified as "secondary mania" and the rest "complicated mania" (alcoholism beginning after the onset of bipolar disorder). Hence, alcohol problems could be thought as complicated phenomena of bipolar disorder in this study. The long-term psychosocial outcome probably depends on the primary diagnosis. After excluding complicated clinical conditions (e.g., psychiatric comorbidity), a follow-up study on bipolar disorder also confirmed a poor social outcome for bipolar patients even when euthymic (Cooke et al., 1996). For manic patients no strong relationship between the presence of affective syndromes at follow-up and psychosocial functioning has been found (Harrow et al., 1990). We suggest that although alcohol abuse is known to be a predictor of a poor outcome for bipolar disorder, its effect is solely on the psychopathological aspects.

There were several methodological limitations in this study. Firstly, this was a naturalistic study with a clinical population. The actual prevalence of alcohol or drug abuse and psychosocial outcome of bipolar disorder may not be accurately represented by the results. Secondly, the inclusion criteria, of a 15-or-more-year follow-up, resulted in the subjects having a larger mean age. The age-related effects probably worsened psychosocial outcome and reduced the incidence of new substance abuse. The lifetime prevalence of alcohol use disorders would be greater than the prevalence of currently active cases. Thus, it was not possible to demonstrate the interaction of current psychosocial function and alcohol problems in this study. Thirdly, the validity of the information on alcohol or substance use problems is an important measurement issue in any study. Some of our subjects probably minimized their substance use histories. Thus, we had to make the diagnosis for substance use disorders basing on the data from a self-report, family member's confirmation, and medical records.

To conclude, this investigation indicates a lower prevalence of alcohol problems among Chinese bipolar disorder patients. This finding may be additional evidence demonstrating the effect of deficiency in ALDH–2 activity against development of alcoholism. With such a low comorbidity of alcohol use disorders, our results reveal that Chinese bipolar patients do not have a more favorable long-term psychosocial outcome than Western patients. In addition, there is no difference between alcoholic and non-alcoholic groups as regards psychosocial functions. Thus, we suggest that the bipolar disorder itself, rather than comorbid alcohol use disorders, has the impact on the long-term psychosocial outcome. Furthermore, bipolar disorder may result in a steady portion of patients persistently dysfunctioning in various psychosocial aspects.

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