Suicide Attempts in Bipolar Patients

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Background: Between 25% to 50% of patients with bipolar disorder make suicide attempts during their lives, but there are some controversies about factors related to suicide attempts in this group of patients. The aim of this study is to investigate the association between suicide attempts and the predictive factors previously described in the literature.

Method: The sample included all 169 patients with DSM-III-R bipolar I disorder identified in a delimited area (northern Spain). Sociodemographic, clinical, and family history variables measured by Research Diagnostic Criteria-Family History were analyzed. Significant variables were introduced in a logistic regression analysis to control for the effects of other variables.

Results: There were 56 patients (33%) who had one or more suicide attempts. Early age at onset, history of hospital admission during depressive episodes, drug abuse, and family history were significantly associated with suicide in the univariate analyses ($p < .05$). A much higher proportion of patients with onset at or before 25 years of age than patients with onset after 25 years of age attempted suicide (23% vs. 10%). The age at onset was no longer significant after controlling for the other 3 variables included in the logistic regression analysis.

Conclusion: Suicide attempts are highly prevalent in bipolar patients and are related to drug abuse, family history of affective disorders, and severe depressive episodes. This study suggests that the risk of suicide in patients with an early age at onset could reflect other variables such as drug abuse, a history of hospital admissions for depression, or family history.

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Bipolar disorder is associated with high rates of relapse and recurrence. Since manic and/or depressive exacerbations frequently require psychiatric hospitalization, this illness has a major impact on health care resources. Many patients experience their first episode early in life, and recurring episodes may have a cumulative negative effect on patients' lives. In fact, the long-term course of bipolar disorder is frequently complicated with suicide attempts.

According to Goodwin and Jamison,[1] approximately 19% of the deaths of people with bipolar disorder are due to completed suicide. Suicide attempts are important since prior suicide attempts are one of the best warning signals of completed suicide.[2]

Goodwin and Jamison[1] estimated that between 25% to 50% of patients with bipolar disorder make at least 1 suicide attempt during their life span. In the Epidemiologic Catchment Area (ECA) study, the lifetime rate of suicide attempts of patients with this diagnosis was 29%.[3] Several illness variables may be associated with the high rates of suicide attempts in bipolar patients, including severity of the illness, hopelessness, and depressive episodes.[4] Sociodemographic factors appear to have less predictive value. Nevertheless, the high rate of suicide attempts among bipolar patients may also be related to the adverse developmental effects of an early age at onset, psychotic symptoms, frequency of episodes, and alcohol and drug misuse. There is no agreement about the importance of these variables, and there are discrepancies between different studies.[5]

All patients with bipolar I disorder in Álava, a province of the Basque Country, Spain, were identified in a survey.[6,7] The aim of the study was to test the association between suicide attempts in this representative sample of bipolar patients and the predictive factors previously described in the literature.

METHOD

Patient Sample

The sample consisted of all 169 inpatients and outpatients of Hospital Santiago Apóstol, Álava, Spain, diagnosed as having bipolar I disorder (DSM-III-R) assessed between February 1994 and December 1996. This hospital receives patients from a delimited area of 350,000 inhabitants and is the only psychiatric general hospital for

Table 1. Univariate Analysis Comparing Bipolar Patients With and Without Suicide History[a]

Variable	Nonsuicidal N	Nonsuicidal %	Suicidal N	Suicidal %	χ^2	p	Odds Ratio (95% CI)
Gender					0.24	.63	1.2 (0.6 to 2.2)
Female	67	40	31	18			
Male	46	27	25	15			
Marital status					2.2	.14	0.6 (0.3 to 1.2)
Married	64	38	25	15			
Not married	49	29	31	18			
Age at onset					5.6	.018	0.4 (0.24 to 0.86)
≤ 25 years	57	34	39	23			
> 25 years	56	33	17	10			
Hospitalization for depression					21.53	< .001	4.9 (2.5 to 9.9)
Yes	38	22	40	24			
No	75	44	16	9			
Psychotic symptoms					0.16	.68	1.2 (0.5 to 2.8)
With	92	54	47	28			
Without	21	12	9	5			
Alcohol abuse					0.94	.33	1.5 (0.68 to 3.1)
Yes	21	12	14	8			
No	92	54	42	25			
Drug abuse					4.57	.033	2.9 (1.0 to 7.7)
Yes	8	5	10	6			
No	105	62	46	27			
Family history of affective disorders					11.83	.001	3.3 (1.6 to 6.5)
With	49	29	40	24			
Without	64	38	16	9			

[a]Abbreviation: CI = confidence interval.

acute patients in the province, so the sample represents all bipolar I patients treated in this period.

Diagnoses were made by at least 1 research psychiatrist (A.G.-P.) using the Structured Clinical Interview for DSM-III-R, Patient Version.[8] After the completion of this scale, a semistructured clinical interview was conducted to obtain information about the chronology of the patient's illness, treatments, and previous suicide attempts. Clinicians, at least 1 family member, and the medical records always corroborated these patients' histories. The methodology has been described in detail before.[6]

A suicide attempt was defined as a self-destructive act with some degree of intent to end one's life. All suicide attempts were severe enough to require a hospital visit, and most of them required the hospitalization of the patient. We considered both violent and nonviolent suicide attempts, but they were mainly nonviolent suicide attempts, predominantly involving intoxication with psychotropic substances.

The association of suicide attempts and positive family history of affective disorders was made considering first- and second-degree relatives, following the Research Diagnostic Criteria-Family History (RDC-FH).[9]

Statistical Analysis

The bipolar patients were divided into 2 nonoverlapping groups: patients with a history of suicide attempts and those without a history of suicide attempts. Age differences between the 2 groups were compared using the Mann-Whitney U test. Association between the history of suicide attempts and previously described factors was studied with odds ratios (ORs), 95% confidence intervals, and chi-square tests for significance. The factors examined in these univariate analyses were gender, marital status, early age at onset (25 years or younger), a history of hospital admissions during depressive episodes, psychotic symptoms, alcohol and drug abuse, and family history of a mood disorder (Table 1). In a second step, each of the significant variables in the univariate analysis was introduced in a logistic regression analysis to control for the effects of the other significant variables.

RESULTS

Of 169 patients, 71 (42%) were men and 98 (58%) were women. Data on the history of suicide attempts were available for the 169 patients. There were 56 patients (33%) who had 1 or more suicide attempts. The mean ± SD age at onset was different between the groups: 25.30 ± 10.37 years in the group with history of suicide attempts, and 30.76 ± 14.36 years in the group without suicide attempts. This difference was statistically significant (Mann-Whitney U = 3861.5, p = .02). In fact, 23% of patients with onset at or before age 25 years had attempted suicide versus 10% of patients with onset after 25 years. There was an association between a family history of affective disorders, measured by the RDC-FH, and the history of suicide attempts (χ^2 = 11.83, p = .001). Patients with more hospital admissions due to depressive episodes had also made more suicide attempts (χ^2 = 21.53, p < .001). Also, patients with drug abuse had a significantly greater history of suicide attempts than patients who did not abuse drugs (χ^2 = 4.57, p = .033).

The ORs of significant factors in the univariate analyses are shown in Table 1. Gender, marital status, history of psychosis, and alcohol abuse were shown not to be related to suicide attempts in the univariate analyses.

The multivariate logistic regression model suggested that family history, drug abuse, and number of hospitalizations for depression were the only statistically significant independent factors (Table 2). Early age at onset was no longer significant after controlling for the other 3 variables.

DISCUSSION

This study finds a high rate of suicide attempts in bipolar patients, especially if one takes into account that the Basque Country has the lowest rate of suicide attempts in Europe.[10] One third of the bipolar patients in Álava had attempted suicide. These results are remarkably similar to those of the most important epidemiologic studies carried out in the United States. The rates of suicide in bipolar I

Table 2. Logistic Regression Comparing Bipolar Patients With and Without Suicide History[a]

Parameter	p Value	Odds Ratio (95% CI)
Age at onset > 25 years	.23	0.6 (0.3 to 1.4)
Drug abuse	.027	3.9 (1.2 to 13.3)
Hospitalization for depression	< .001	5.8 (2.7 to 12.5)
Family history of affective disorders	.005	3.0 (1.4 to 6.4)

[a]Hosmer-Lemeshow goodness-of-fit test = 1.862, df = 7, p = .97.
Abbreviation: CI = confidence interval.

patients in the Basque Country are as high as in other areas of the world. This could be due to the fact that suicide attempts in these severely ill populations are not related to cultural or religious ideas.

The ECA study found that 29% of bipolar patients have attempted suicide at least once in their lives.[3] Other authors have found slightly lower results. Johnson and Hunt[11] found that 20% of patients with bipolar disorder had attempted suicide. On the contrary, Roy-Byrne et al.[12] described much higher rates (58%), but it is important to remember that their sample included inpatients with unipolar and bipolar mood disorders and that our study included not only inpatients but also outpatients with bipolar disorder.

The high rate of suicide attempts in bipolar patients is not surprising. In fact, bipolar illness is associated more frequently with a history of suicide attempt than other Axis I disorders.[3] According to Chen and Dilsaver,[3] bipolar disorder has an OR of 2.0 greater risk of suicide than unipolar depression and 6.2 greater risk of suicide than any other Axis I disorder. In relation with that issue, Sharma and Markar[13] found that suicide attempts were 3 times more frequent in bipolar patients than in schizophrenic patients.

The recognition of risk factors for suicide remains a major clinical challenge to reduce morbidity and mortality in bipolar disorders. In our study, we did not find relevant differences between these 2 subgroups in sociodemographic variables such as sex and marital status. Concerning the relation between suicide attempts and gender, it is universally known that women attempt suicide more often than men, in both general population samples and in affective disorder samples, but there are some controversies about this issue in bipolar patients. Oquendo et al.[5] found that suicide attempts were more frequent in men than in women. Dilsaver et al.[14] and Sharma et al.[15] did not find gender-related differences. Chen and Dilsaver,[3] using data from the ECA study, included 186 bipolar I and II patients and found that suicide attempts were more frequent in women. Data are probably different if only severe suicide attempts are considered, as we have done in our article, rather than if other suicide signals are considered.

Our data in relation to marital status are similar to those reported by Oquendo and colleagues,[5] who also found no differences in those attempting suicide in relation to marital status.

Our study found that patients hospitalized during depressive episodes had a significantly higher history of suicide attempts. It is assumed that suicidal ideation is associated more with depressive episodes than with manic episodes. In fact, there is some evidence of the association in the literature. Black et al.,[16] in research about the outcome of affective patients, found that mortality due to suicide was much higher in depressed bipolar patients than in manic bipolar patients. Also, Isometsa et al.[17] reported that the majority of bipolar I patients who committed suicide had had depressive (79%) or mixed (11%) episodes when they died. Moreover, Tondo and coworkers[18] found that suicide attempts were associated with mixed or depressive episodes in bipolar I patients. The number of previous depressive episodes and their severity have previously been associated with suicide risk.[5,19]

Our study suggested that a family history of mood disorders might be associated with suicide attempts. Prior studies showed that a family history of manic depressive illness was significantly associated with more suicidal ideation, suicide attempts,[14] and completed suicides.[20,21]

Our results indicated that patients with drug abuse had more suicide attempts than those patients who did not abuse drugs. Two prior studies[18,22] have found a similar association between suicide and drug abuse, although another study[5] did not find this association. There are very few studies about the relationship between these factors in bipolar patients.[5,18,22] Our sample is the biggest sample in which the association between drug abuse and suicide attempts has been studied, with the advantage of the study's being done in a delimited geographic area. In this model, we analyzed the relationship between suicide attempts and other variables, including drug abuse, which has not previously been done in any other research. Drug abuse can contribute to suicide attempts by diminishing cognitive capabilities, by increasing depressive symptoms, or by disinhibiting or disturbing neurochemical cerebral pathways.[23–25]

Similar to prior studies,[5,12,26,27] our study did not find a relationship between suicide and psychotic symptoms. The univariate analysis showed a relationship between early onset of the illness and suicide attempts, but this effect disappeared after controlling for other variables. The literature provides conflicting results on this issue.[5,13,17,28–30] Our study suggested that the risk of early age at onset could reflect other variables such as drug abuse, depressive episodes, or family history. Ahrens et al.[28] found that patients with unipolar, bipolar, and schizoaffective disorders attending a lithium clinic who had attempted suicide were younger at onset, but they had a similar number of episodes and a similar duration of illness to patients without a history of suicide attempts. Other studies also found an association between younger age at onset and a history of sui-

cide attempts[11,29,30] or consummated suicide.[13] Nevertheless, not all the authors have found similar results. Isometsa et al.[17] reported that the mean age of patients that committed suicide was relatively high (55 years for women and 43 years for men), and Oquendo et al.[5] did not find differences in age at onset related to suicide.

The discrepancies can be explained by the methodology of the study. According to our results, it is important to control variables related to age at onset. It is possible that incomplete maturity, along with the impulsiveness and aggressiveness associated with adolescence and early adult age, could explain drug abuse in young patients. The risk of suicide attempts is probably more related to some types of behavior of young patients, such as drug abuse, than to the age at onset per se. Biological and environmental factors, such as a family history of affective disorders, cannot be forgotten when carrying out research on suicide. A history of more depressive episodes is logically related to suicide risk, since suicide attempts occur especially during depressive episodes.

In conclusion, this study suggests that an early age at onset of bipolar disorder may not be independently associated with suicide attempts. The other variables, history of drug abuse, hospitalization during depressive episodes, and mood disorders in the family, may explain the association between age and suicide attempts.

To our knowledge, this is the largest sample of bipolar I patients in which the variables associated with suicide attempts have been tested using a multivariate analysis. The recognition of risk factors for suicide is important in order to foresee and prevent them. Reducing morbidity and mortality from suicide clearly remains an important clinical challenge in the treatment of patients with major mood disorders.[31] There is evidence that only lithium carbonate has shown an antisuicide effect. Preventive measures should be specified for different groups of patients. This study suggests that prevention of suicidal behavior in bipolar patients may need to be particularly focused on the treatment of drug abuse in young patients and of depressive episodes serious enough to cause hospitalization. Certainly, strengthening personal relationships and decreasing social stress may also be important issues in the reduction of suicide risk in bipolar patients.[32]

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