Lifetime Rates of Suicide Attempts among Subjects with Bipolar and Unipolar Disorders Relative to Subjects with Other Axis I Disorders

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The lifetime rate of suicide attempts among subjects in the Epidemiologic Catchment Area database with bipolar disorder, unipolar disorder, and any other DSM-III–defined Axis I disorder were determined. The latter constituted a control or reference group. The lifetime rates of suicide attempts of persons in these diagnostic groups were 29.2%, 15.9%, and 4.2%, respectively. Multivariate logistic regression analysis was used to calculate the odds ratio of subjects within a diagnostic group having a history of a suicide attempt relative to subjects in a second group. The odds ratio of subjects with bipolar disorder having a history of a suicide attempt relative to subjects in the control group was 6.2 ($df = 1$, $\chi^2 = 5347.2$, $p < .0001$). *The odds ratio of subjects with unipolar disorder having a history of a suicide attempt relative to subjects in the control group was 3.1* ($df = 1$, $\chi^2 = 4785.2$, $p < .0001$). *The odds ratio of subjects with bipolar disorder having a history of a suicide attempt relative to unipolar subjects was 2.0* ($df = 1$, $\chi^2 = 697.9$, $p < .0001$). *Bipolar disorder has a strong relationship to a history of suicide attempts relative to unipolar disorder and other Axis I disorders.*

Key Words: Affective disorders, depression, Epidemiology Catchment Area (ECA) survey, multivariate logistic regression analysis, suicide

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Goodwin and Jamison (1990) thoroughly reviewed the literature on the relationship between suicide and bipolar disorder for the period of 1936 to 1988. They discovered that 18.9% of the deaths of bipolar persons were due to suicide. In contrast, Winokur and Tsuang (1975) observed that the rate of completed suicide among persons with unipolar disorder in the Iowa 500 series during a 30- to 40-year follow-up interval was only 7.7%. The results of these extensive and meticulously conducted studies suggest that the rate of suicide may be higher among bipolar persons. We did not compare the rates of completed suicide among bipolar and unipolar subjects, a subject about which there are considerable data. Instead, we compared the lifetime rates of suicide attempts among persons with bipolar disorder, those with unipolar disorder, and subjects in a control group.

Comparisons of the lifetime rates of suicide attempts across multiple diagnostic groups is most likely to be accurate if the sampling procedures and methods of case ascertainment are standardized. The Epidemiologic Catch-

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ment Area (ECA) database meets the criterion of identical diagnostic practices across sites. This database was therefore used to determine the lifetime rates of one or more suicide attempts among persons with bipolar or unipolar disorder and control subjects. The control subjects were persons with any Axis I disorder other than bipolar or unipolar disorder.

Methods

ECA Database

The ECA database was obtained by interviewing over 18,000 adults living in New Haven, Baltimore, St. Louis, Durham, and Los Angeles (Robins et al 1990). Data required in rendering diagnoses was obtained using the Diagnostic Interview Schedule (DIS) (Robins et al 1981). Diagnoses were rendered using DSM-III criteria (APA, 1980).

Subjects

This study included subjects with bipolar disorder (n = 168), subjects with unipolar disorder (n = 801), and those meeting the criteria for any Axis I disorder other than bipolar disorder or unipolar disorder (n = 5697). Subjects classified as having bipolar disorder had a history of both major depressive disorder and of either hypomania or mania. Subjects with unipolar disorder had a history of major depressive disorder but had never had a hypomanic or manic episode.

Method of Determining the Lifetime Rate of Suicide Attempts

The ECA investigators relied on the direct report of subjects in their efforts to measure suicide attempts.

Statistical Analysis

Student's t-test was used to determine whether the mean age of onset of bipolar disorder and unipolar disorder differed significantly. Multivariate logistic regression analysis was used to determine the strength of the relationship between suicide attempts and any two distinct diagnostic groups. Variables entering into the logistic regression model were age, sex, race, marital status, history of the abuse of alcohol and drugs, and comorbidity for panic disorder. The data entering into the multivariate logistic regression analysis were subject to a weighting procedure (Robins et al 1990).

Measurements of variance in the text refer to the standard deviation of the mean. All probability statements are two tailed. The critical value of α was set for .05.

Table 1. Rate of Suicide Attempts in Relationship to Diagnostic Group, Sociodemographic Characteristics, and Comorbidity for Substance Abuse and Panic Disorder

	Controls, % (n)	Unipolar, % (n)	Bipolar, % (n)
Overall	4.2 (5697)	15.9 (801)	29.2 (186)
Sex			
Male	2.1 (2618)	9.2 (207)	19.2 (52)
Female	5.9 (3079)	18.2 (594)	33.6 (116)
Ethnicity			
Anglo	4.5 (3324)	14.6 (563)	31.8 (107)
Black	3.2 (1706)	17.9 (140)	20.9 (43)
Hispanic	4.6 (484)	20.3 (29)	12.5 (8)
Other	7.6 (131)	25.0 (16)	60.0 (5)
Age, yr			
18–29	6.1 (1366)	21.5 (219)	28.8 (73)
30–44	6.2 (1353)	14.5 (337)	30.9 (68)
45–64	3.5 (1261)	14.2 (162)	33.3 (21)
65+	1.6 (1715)	9.8 (82)	0.0 (6)
Socioeconomic status			
Lowest	3.1 (1960)	20.3 (133)	37.5 (24)
2nd quartile	5.5 (1902)	20.5 (249)	34.4 (64)
3rd quartile	4.6 (1286)	13.3 (278)	20.8 (53)
Highest	2.7 (542)	8.6 (139)	24.0 (25)
Marital status			
Married	3.1 (2373)	10.1 (297)	34.0 (53)
Widowed	1.7 (1073)	16.7 (72)	28.6 (7)
Divorced/separated	8.1 (1049)	20.5 (259)	35.9 (53)
Single	4.9 (1199)	18.6 (172)	18.5 (54)
Panic disorder			
Negative	3.9 (5521)	15.6 (711)	29.0 (131)
Positive	16.1 (137)	19.0 (79)	31.4 (35)
Alcohol problem			
Negative	3.6 (3961)	12.8 (655)	24.6 (110)
Positive	5.6 (1709)	30.1 (143)	38.6 (57)
Drug problem			
Negative	3.5 (4973)	14.3 (672)	25.6 (117)
Positive	9.4 (694)	24.6 (126)	38.8 (49)

Results

The mean ages of onset of affective illness of the subjects with bipolar disorder and unipolar disorder were 20.7 ± 9.7 and 28.3 ± 13.7 years, respectively (df = 960, t = −8.39, $p < .0001$). The lifetime rates of one or more suicide attempts among the subjects with bipolar disorder, unipolar disorder, and any other Axis I disorder were 29.2%, 15.9%, and 4.2%, respectively. The sociodemographic characteristics of subjects in each group are presented in Table 1.

The odds ratios of subjects with unipolar disorder and bipolar disorder having a history of a suicide attempt relative to the control subjects were 3.1 (df = 1, χ^2 = 4785.2, $p < .0001$) and 6.2 (df = 1, χ^2 = 5,347.2, $p <$ .0001), respectively. The odds ratio of subjects with bipolar disorder having a history of a suicide attempt

relative to subjects with unipolar disorder was 2.0 ($df = 1$, $\chi^2 = 697.9$, $p < .0001$).

Table 1 indicates that the lifetime rate of suicide attempts among bipolar persons is higher than that of subjects with unipolar disorder or any other Axis I disorder regardless of sex, ethnicity, age, socioeconomic status, comorbidity for panic disorder, and marital status.

Discussion

Subjects in the ECA database with a history of bipolar disorder had odds ratios of having had a suicide attempt that were 2.0 and 6.2 times greater than that of persons with unipolar disorder or any other Axis I disorder, respectively. This finding is consistent with the possibility that the rate of suicide among bipolar persons (Goodwin and Jamison 1990) is more than twice as high than that among persons with unipolar disorder (Winokur and Tsuang 1975). The relatively high rate of suicide attempts among bipolar subjects is not an artifact of age, sex, socioeconomic status, marital status, history of drug and/or alcohol abuse, or comorbidity for panic disorder.

The literature links suicide among affectively ill persons to the depressed state. However, many manic persons are concurrently depressed. Dilsaver et al (1994) recently reported that 44 (52.7%) of 93 consecutively evaluated patients meeting the Research Diagnostic Criteria (Spitzer et al 1977) for primary mania simultaneously met the criteria for major depressive disorder. The patients who did and did not meet the criteria for major depressive disorder were classified as having pure and depressive mania, respectively. One (2.0%) of 49 patients with pure mania was suicidal. In contrast, 24 (54.5%) of the 44 patients with depressive mania were suicidal. These data raise the possibility that bipolar persons are at a high risk for exhibiting suicidal behavior or completing suicide in both the depressive and manic phases.

The high rate of suicide attempts among bipolar persons may be related to the adverse developmental effects of an early age of onset, longer duration of illness, and deterioration of hope due to an earlier mean age of onset, total number episodes of affective illness, and the frequency of episodes. Fawcett et al (1987) determined, in the course of a prospective study, that hopelessness and cycling were predictors of completed suicide. Frequent episodes of depression and mania understandably lend themselves to demoralization and despair. A review of the literature indicated that after the sixth episode of mania and/or depression, the interval between cycles shrinks to a mean of merely 10 months (Goodwin and Jamison 1990). There is considerable variance around this mean. A significant fraction of bipolar patients have a cycle interval on the order of days to weeks.

Psychosis in the context of episodes of depression and mania may also be a factor contributing to suicidality. Psychotic individuals may be presumed be more severely ill than nonpsychotic persons and to therefore be at a higher risk of suicide. Bipolar subjects may be more likely to have psychotic features than unipolar subjects. Winokur (1994) reported that 27% of 100 subjects with unipolar depression were delusional. In contrast, Goodwin and Jamison (1990) reported that 44–96% of all subjects with mania included in four studies were delusional. Fourteen–66% of the subjects in these studies hallucinated. Twelve–to 66% and 6–50% of all subjects with bipolar depression had delusions or hallucinations, respectively. The relationship between psychosis and suicidality among unipolar and bipolar subjects may be assessed in a prospective clinical study.

Comorbidity for panic disorder and substance abuse are also factors that may contribute to the high risk of completed suicide and suicide attempts among bipolar persons. Chen and Dilsaver (1995) reported that the rate of comorbidity for panic disorder among bipolar and unipolar subjects in the ECA database were 20.8% and 10.0%, respectively. Panic disorder is associated with elevated rates of suicidal ideation and suicide attempts (Cox et al 1994; Johnson et al 1990; Fawcett and Kravitz 1983; Lepine et al 1993; Noyes 1991; Rudd et al 1993; Weissman et al 1989). Sixty-one percent of the bipolar subjects in the ECA database have a history of abuse of or dependence on alcohol and drugs. In contrast, only 27% of the subjects with unipolar disorder have such a history of abuse of or dependence on alcohol and drugs.

The results of this epidemiologic study are consistent with previously published data indicating that bipolar persons are at a particularly high risk of suicide. The epidemiologic data presented are consistent with the results of clinical studies indicating that suicide is more common among bipolar (see Goodwin and Jamison [1990] for a review of the literature) than unipolar subjects (e.g., Winokur and Tsuang 1975).

Bipolar disorder may well be a more lethal disease than unipolar depression. There are several factors that could hypothetically contribute to this phenomenon. An earlier age of onset, greater tendency to psychosis, higher frequency of episodes (including depressive mania), and higher rates of comorbidity for panic disorder (Chen and Dilsaver 1995) and substance abuse (Goodwin and Jamison 1990) may individually or collectively contribute to the higher rate of suicide attempts among persons with bipolar relative to unipolar disorder.

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