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Clinical Correlates of Planned, More Lethal Suicide Attempts in Major Depressive Disorder

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Abstract

Background—Assessment of suicide plans is standard in acute psychiatric care, but there is a limited evidence base to guide this routine clinical practice. The purpose of this study was to investigate clinical correlates of suicide planning in depressed patients.

Methods—151 patients with major depressive disorder and a lifetime history of suicide attempt were studied. Subjects received a comprehensive evaluation including structured diagnostic interview for Axis I and II disorders, current symptoms, impulsivity, and systematic assessment of suicide planning prior to the most recent suicide attempt.

Results—Seriousness of suicide attempt planning correlated with lethality of suicidal acts. Comorbid anxiety disorder and anxiety correlated with less suicide planning. Specifically, this negative correlation was with comorbid panic disorder. Planning did not correlate with severity of depression or aggressive/impulsive traits.

Limitations—Cross-sectional design, retrospective recall of suicide planning data, limited applicability to completed suicide or other psychiatric disorders.

Conclusions—In major depression, comorbid panic disorder appears protective against more carefully planned, higher lethality suicide attempts. Surprisingly, severity of depression and aggressive impulsive traits do not predict planning or lethality of suicide attempts. We have previously reported that anxiety severity protects against the probability of a suicide attempt and now extend that observation to show there is protection against lethality of a suicide attempt. Treatment of anxiety without directly treating major depression may place patients at greater risk of suicidal behavior.

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Conflict of Interest

The authors report no financial affiliations or relationships relevant to the subject of this article.

Keywords

major depression; suicide attempt; suicide intent; suicide planning; anxiety disorder; panic disorder

1. Introduction

A patient with a suicide plan is generally considered a psychiatric emergency. Clinicians tend to view suicide planning as a step on the path from ideation to attempt. Since suicide planning tends to influence whether a patient is hospitalized (Baca-Garcia et al., 2004), it can significantly affect treatment. Studies report associations of suicide planning with more medically lethal attempts (Beck et al., 1975; Power et al., 1985; Brown et al., 2004) and a greater risk of suicide (Coryell and Young, 2005; Harriss et al., 2005). Although less planned and more impulsive suicide attempts may be less lethal, they may still result in death, particularly when violent means are available (O'Donnell et al., 1996; Conner et al., 2005). A better understanding of the characteristics of suicide attempters with higher versus lower levels of suicide planning may improve identification and treatment of these patients (Kessler et al., 1999; Wyder and De Leo, 2007).

Our goal was to investigate clinical correlates of suicide planning in a well-characterized sample of depressed suicide attempters. We studied the relationship of planning prior to subjects' most recent suicide attempt with depression severity, trait impulsivity, comorbid psychiatric disorders and other known correlates of suicidal behavior.

2. Methods

2.1 Subjects

A total of 151 patients ages 18–65 years [mean: 34.5 (SD10.8)] who met DSM-IV criteria for Major Depressive Disorder and with a history of at least one lifetime suicide attempt were included. Of the 151 patients, 129 (85%) were inpatient and 22 (15%) were outpatient. One hundred (66.2%) were female and the mean age was 34.5 (SD 10.8) years. The majority of suicide attempts involved non-violent methods (i.e. overdose) for the most recent attempt (N= 109, 72.3%). Patients with current substance use disorder, neurological illness, or active medical conditions were excluded. The study was approved by the Institutional Review Board and all subjects gave written informed consent after a complete description of the study.

2.2 Measures

At study entry, all subjects received a comprehensive evaluation. DSM-IV disorders were diagnosed based on the Structured Clinical Interview for DSM-IV, patient edition (SCID) for Axis I. Axis II disorders were diagnosed after acute mood symptoms had subsided using the SCID II. A consensus conference led by senior research clinicians (MFG, MAO, JJM, AKB) determined the diagnosis using all available information. Anxiety disorder includes panic disorder, agoraphobia, social phobia, simple phobia, obsessive compulsive disorder, posttraumatic stress disorder and generalized anxiety disorder. Cluster B personality disorder includes antisocial, borderline, histrionic, and narcissistic personality disorders. Depression severity was assessed with the 17-item Hamilton Depression Rating Scale (HDRS) (Hamilton, 1960) and the Beck Depression Inventory (BDI) (Beck et al., 1961). Level of hopelessness was assessed with the Beck Hopelessness Scale (BHS) (Beck et al., 1974a). Lifetime aggression was assessed with the Brown-Goodwin Lifetime History of Aggression (BGLHA) (Brown et al., 1979) and impulsivity with the Barratt Impulsivity

Scale (BIS) (Barratt et al., 1965). A suicide attempt was defined as a self-destructive act with intent to end one's life. The lifetime number of suicide attempts, and the degree of medical injury due to the most recent suicide attempt were assessed using the Columbia Suicide History Form (Oquendo et al., 2003) and the Medical Lethality Scale (Beck et al., 1975), which ranges from 0 (no medical damage) to 8 (death), where 4 indicates that medical hospitalization was required. A reported history of childhood sexual abuse was rated as present or absent. Substance use disorders were diagnosed using the SCID, and cigarette smoking was assessed based on subjects' report of use during the past 3 months. All raters for this study had at least a master's degree. Inter-rater agreement kappa scores were >0.80 for Axis I disorders and >0.65 for Axis II disorders, and intraclass coefficients for psychopathological measures and suicide history ranged from 0.80 to 0.96.

2.3 Level of Suicide Planning

The level of suicide planning prior to the most recent attempt was measured with the planning subscale of the Suicide Intent Scale (SIS) (Beck et al., 1974b), derived by factor analysis performed on a large sample (N=687) (Diaz et al., 2003). The SIS is scored 0–16, with higher scores indicating a more planned suicide attempt. The planning subscale of the SIS consists of 8 items dealing with objective aspects of planning the attempt as follows: Item 1(isolation), Item 2 (timing), Item 3 (precautions against discovery), Item 5 (final acts in anticipation of death), Item 6 (active preparation for attempt), Item 7 (suicide note), Item 8 (communication) and Item 15 (degree of premeditation). The mean score of the sample on the SIS planning subscale was 6.4 (SD 3.3, range 0 to 14). The median time interval from subject's most recent suicide attempt until study entry was 2.3 months (range: 0.0–308.1 months).

2.4 Statistical Analyses

Spearman correlation analysis (*rho*) was used to examine the relationship between the level of suicide attempt planning and quantitative variables. Student's t tests were used to compare means. Multiple linear regression analysis was performed with SIS planning subscale score as the dependent variable. Baseline depression severity (HDRS score) and lifetime impulsivity (BIS score) were included in the model as independent variables because of their established importance in suicidal behavior (Mann et al., 1999). Variables associated in bivariate tests with suicide planning at $p<0.10$ were entered into the model as independent variables. For all other statistical tests, significance was set at $p<0.05$, two-tailed. Analyses were performed using SPSS version 15.0J (SPSS Inc., Chicago, USA).

3. Results

3.1 Correlates of suicide planning

Suicide planning prior to the most recent attempt (SIS planning subscale) correlated modestly with medical lethality (Medical Lethality Scale score) of the most recent suicide attempt (*rho*=0.28, p=0.001, N=150). However, suicide planning did not correlate with number of lifetime suicide attempts (*rho*=0.09, p=0.26, N=150), baseline depression severity (HDRS: *rho*=0.02, p=0.83, N=147; BDI: *rho*=0.03, p=0.71, N=128); hopelessness (BHS: *rho*=−0.01, p=0.94, N=131), lifetime aggression (BGHLA score: *rho*=−0.05, p=0.58, N=146), or impulsivity (BIS score: *rho*=−0.13, p=0.16, N=116).

Associations of suicide planning with demographic and diagnostic variables are summarized in Table. Suicide planning did not differ by sex, household status, employment, smoking status, reported history of childhood sexual abuse, family history of suicide/suicide attempt or depression in first-degree relatives. Suicide planning was not associated with comorbid

lifetime substance use disorder, Cluster A, B, or C personality disorder, dysthymia, or eating disorder.

Having any comorbid lifetime anxiety disorder was associated with less planning prior to the most recent suicide attempt. When anxiety disorder subtypes were analyzed, comorbid panic disorder was associated with less suicide planning ($t=-2.7$, $df=149$, $p=0.008$), but not comorbid posttraumatic stress disorder, specific phobia, social phobia or other specific anxiety disorders (data not shown).

3.2 Regression analysis

We tested a multiple linear regression model with suicide planning (SIS planning subscale) prior to the most recent suicide attempt as the dependent variable. The independent variables were baseline depression severity (HDRS-17 score), lifetime impulsivity (BIS score) and variables associated with planning in bivariate tests: marital status, smoking status, comorbid lifetime anxiety disorder, comorbid lifetime dysthymia. Lifetime comorbid anxiety disorder was inversely associated with suicide attempt planning [B (S.E.)=−0.32 (0.10), β=−0.29, p=0.002]. No other variable was significant. When we substituted lifetime comorbid anxiety disorder with lifetime comorbid panic disorder in the same model as above, the results were similar. Lifetime comorbid panic disorder was inversely associated with level of suicide planning [B (S.E.)=−2.20 (1.01), β=−0.21, p=0.03].

4. Discussion

To our knowledge, this is the first study to investigate the relationship of suicide planning prior to an attempt to depression severity, trait impulsivity and comorbid psychiatric disorders in depressed suicide attempters. Suicide planning was correlated with medical lethality of suicide attempts but was not correlated with lifetime impulsivity or severity of baseline depression. Comorbid panic disorder was associated with less planned, lower lethality suicide attempts. These findings are consistent with a general population survey demonstrating that any psychiatric comorbidity is associated with less planned suicide attempts (Kessler et al., 1999).

Major depression comorbid with panic disorder is associated with higher risk of suicide attempt in some studies (Sareen et al., 2005; Diaconu and Turecki, 2007), and not others (Horning and McNally, 1995; Vickers and McNally, 2004). We have also reported that severity of anxiety in major depression is protective against suicide attempts (Placidi et al., 2000, Nakagawa et al. in press). However, little has been known about the relationship of comorbid panic disorder to suicide planning, and we now find that it is associated with less lethal, less planned suicide attempts. Thus, anxiety may reduce risk of a suicide attempt (Placidi et al., 2000) and comorbid panic disorder may reduce the degree of planning and suicidal intent favoring less lethal suicide attempts.

Lower cognitive functioning is associated with less planning of suicide attempt (Conner et al., 2007). Comorbid panic disorder might lower the threshold for less planned/more impulsive suicide attempts by impairing cognition and decision-making in depressed patients. The mechanism relating comorbid panic disorder to lower suicide planning requires further study.

Our results are consistent with other studies (Baca-Garcia et al. 2005; Wyder and De Leo, 2007), using similar measures, that found no association between suicide planning and “trait impulsivity” (BIS score). We also found no association of suicide planning with Cluster B personality disorder, of which a core feature is trait impulsivity. These findings support the notion that suicide attempt planning and trait impulsivity are different dimensions.

Impulsivity itself is multi-dimensional according to Patton et al. (1995), with components such as non-planning impulsiveness, attentional impulsiveness and motor impulsiveness and. In addition, the relationship between impulsivity and impulsive attempt appears to be inconsistent across age groups. One study in youth found that more impulsive subjects reported more suicide planning (Witte et al. 2007). As in other studies (Beck et al., 1975; Power et al., 1985; Brown et al., 2004), we found a positive correlation between suicide planning and medical lethality of suicide attempts. However, in contrast to previous reports that show more severe depression is associated with more planned suicide (Goldney, 1981; Brown et al., 1991), we did not find such an association. This may due to the fact that majority of our sample were middle aged non-violent suicide attempters. Astruc et al. (2004) report that suicide intent (i.e. planning) and depression are associated in those who make violent attempts, but not among those making non-violent attempts. Conner et al. (2007) argue that associations between depression severity and attempt planning do not generalize to middle and older adult samples. Further, limiting the sample to a depressed clinical sample may have failed to show this association due to a floor effect. Nevertheless, further study of the relationship between impulsiveness, depression and suicide planning is needed.

Some limitations of this study warrant discussion. Causality cannot be inferred from statistical associations given the cross-sectional design. The collection of data retrospectively regarding past suicide attempts and the assessment of patients during a major depressive episode may have affected recall. Our study of MDD limits generalizability of our findings to other psychiatric diagnoses.

Major depressive disorder with comorbid anxiety, particularly panic disorder, may be at less risk of suicide attempts and if suicide attempts occur they are likely to be less planned and less lethal. The implications for treatment of comorbid anxiety in MDD need further research.

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Table

Demographic and clinical characteristics and suicide planning in 151 suicide attempters with major depressive disorder

Characteristics		Planning subscore of the Beck Suicide Intent Scale			Analysis		
		N	Mean	SD	T	df	p
Sex	Male	51	8.0	3.8	1.60	149	0.11
	Female	100	7.0	3.4			
Marital status	Ever married	66	6.7	3.9	−1.88	149	0.06
	Never married	83	7.8	3.1			
Household status	Cohabiting	97	7.2	3.7	1.27	130	0.21
	Alone	35	8.1	3.2			
Employed	Yes	58	7.9	3.8	1.38	146	0.17
	No	90	7.0	3.3			
Smoker	Yes	63	6.8	3.5	−1.67	149	0.09
	No	84	7.8	3.6			
Reported History of Childhood Sexual Abuse	Yes	37	6.5	3.0	−1.57	149	0.12
	No	114	7.6	3.6			
Family History of Depression	Yes	62	7.0	3.7	−1.05	147	0.29
	No	87	7.7	3.3			
Family History of Attempt/Suicide Suicide	Yes	31	6.9	3.9	−0.79	146	0.43
	No	117	7.4	3.4			
Lifetime Dysthymia	With	37	8.2	3.5	1.73	149	0.09
	Without	114	7.0	3.5			
Lifetime Anxiety Disorders	With	41	6.1	3.3	−2.67	149	0.008
	Without	110	7.8	3.5			
Lifetime Eating Disorders	With	19	6.3	3.1	−1.41	149	0.16
	Without	132	7.5	3.6			
Lifetime Substance Use Disorders	With	78	7.0	3.5	−1.13	149	0.26
	Without	73	7.7	3.5			
Lifetime Other Axis I Disorders[a]	With	16	6.5	2.9	−0.99	149	0.32
	Without	135	7.4	3.6			
Cluster A Personality Disorder	With	11	6.9	2.8	−0.41	149	0.69

Characteristics		Planning subscore of the Beck Suicide Intent Scale			Analysis		
		N	Mean	SD	T	df	p
	Without	140	7.4	3.6			
Cluster B Personality Disorder	With	83	6.5	3.4	−0.03	146	0.98
	Without	65	6.5	3.3			
Cluster C Personality Disorder	With	39	7.5	3.1	0.28	146	0.78
	Without	109	7.3	4.7			

[a] Includes psychotic disorder, adjustment disorder, pain disorder, malingering, conduct disorder and attention deficit/hyperactivity disorder.