A Deadly Combination: Depression and Suicide in the Presence of Cancer

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Abstract

The present study was designed to examine differences among cancer patients who died by medical/natural causes or by suicide. This study aims to identify protective and risk factors for suicide in individuals who have been diagnosed with cancer. Unlike previous studies that examined suicidality in cancer patients, our study did not find significant differences between patients with a cancer diagnosis at TOD who died by suicide and those who died by natural or medical causes.

Introduction

An elevated risk of suicide has been found in patients with severe, chronic, and life-threatening forms of medical illness, even after adjusting for depression. [1, 2] Individuals who are diagnosed with a terminal illness are two times more likely to attempt suicide than individuals in the general population. [3] Receiving a diagnosis of a serious illness, such as cancer, is a stressful event that can prove difficult for individuals to cope with regardless of stage or prognosis. [4] However, regardless of gender, additional factors that increase risk for suicide in cancer patients include pain severity, cancer aggressiveness, and poor general prognosis. [5]

The risks for suicidal behaviors are greatest within the first year following cancer diagnosis. [6, 7] Of the individuals at risk for suicide within the first year, most are diagnosed with advanced stages of cancer. [8, 9] The suicide risk tends to decrease thereafter. Nonetheless, the heightened risk for suicide within the first year following diagnosis should warrant increased attention and referral for mental health care. Patients who fear losing their autonomy and independence as cancer progresses are also at increased risk of suicide. [10]

Depression is among the most common psychological responses to receiving a cancer diagnosis. [11] Patients with a cancer diagnosis are at a significantly higher risk for depression as compared to the general population. [12] Within the population of cancer patients, suicidal ideation is associated with severe levels of depression, tendencies for hopelessness, persistent thoughts about death, and a desire for hastened death when compared to the general population. [13,14,15,16] Stress and anxiety associated with cancer can lead the disease to progress faster, and may play a role in worsening depressive symptomatology. [17] Individuals with advanced stages of cancer may also begin feeling as though they are a burden to their loved ones. [18] Perceived burdensomeness has been linked to a decreased ability to find meaning in life and is of particular importance for identifying suicide risk in older adults with cancer. [19] The risk for completed suicide could be mitigated by protective factors, social support from a spouse, or having employment. [20] Education beyond high school lowers the risk of suicide in the one-year period after the initial cancer diagnosis. [9]

Furthermore, an increased focus of family and work roles may reduce suicidal ideation and related issues such as despair or depression. [20]

The present study was designed to examine differences among cancer patients who died by medical/natural causes or by suicide. This study aims to identify protective and risk factors for suicide in individuals who have been diagnosed with cancer. Risk and protective factors may vary for suicidal ideation, suicide attempts, and death by suicide among cancer patients and other populations. [21, 22] A deeper understanding of the most influential factors that contribute to increasing the risk of suicidal behavior in cancer patients may reduce mortality among this vulnerable population. In addition to type and severity of cancer diagnosed, mental health history, social factors, and financial burden were investigated as potential risk and protective factors.

Methods

Subjects

The subjects in this study were adults who died in Cuyahoga County, Ohio ($N = 574$) between the years of 1989 and 2013. Data was obtained from the Cuyahoga county medical examiner's office. Out of the total pool of subjects, individuals were identified as having a diagnosis of can cer at their time of death (TOD) (n = 21). The subjects were classified into two groups: individuals who died by suicide ($n = 11$) and individuals who died by cancer, medical, and/or natural causes ($n = 10$). Three subjects were diagnosed with cancer posthumously at autopsy and were removed from analyses. Only subjects who had received cancer diagnoses prior to death were included for the purposes of our analyses. As a result, 9 individuals were left in each of the condition groups. The suicide group was composed of individuals who were 67% male, 78% Caucasian, 45% married, and the mean age at TOD was 66.60 (SD = 15.4). The natural/medical death group was composed of individuals who were 78% male, 100% Caucasian, 45% married, and the mean age at TOD was 59.3 (7.3). Overall the subjects were mostly male (72%), white (89%), married (45%), and the mean age at the TOD was 63.0 (SD = 11.95).

Measures

The Structured Clinical Interview for DSM-IV

Disorders (SCID-I) assessed for the presence of Axis I diagnoses.[23] Interview questions evaluated the duration, severity, and frequency of the cognitive, emotional, and physical symptoms common to psychiatric disorders.

Previous studies have supported the use of the SCID-I, demonstrating the interview as both valid and reliable for the assessment of Axis I disorders. Interrater reliability for the SCID-I has been demonstrated to be excellent in both inpatient and outpatient populations. [24] Agreement between personal and informant information was good (Kappa = .79), and interrater reliability between raters was excellent (kappa = .84). [25] The results provide support for use with psychological autopsy studies.

Procedure

Research protocol was approved by the Institutional Review Board at Case Western Reserve University. Written informed consent was obtained prior to data collection from legally defined next-of-kin. Detailed information about each subject was collected from family members of the deceased using psychological autopsy procedures. After the clinical social worker received contact information for next-of-kin from the Cuyahoga County Medical Examiner's Office, telephone contact was established with the family members to obtain preliminary consent for participation in the study. Approximately 4-6 weeks after telephone contact, a clinical social worker met with those who had consented for an extensive interview. During the interview, details about the subject's life were obtained. This includes information about their childhood, work and educational history, psychological symptoms, and different life events. Additionally, pertinent records were obtained regarding any prior psychiatric hospitalizations, ongoing outpatient psychiatric treatment, or relevant medical information. When relevant, psychiatric records were requested from the psychiatric and medical facilities with written consent from the families.

After collecting records from the medical examiner, and compiling information from the retrospective psychometric interviews' data collection, subjects were given a psychiatric, personality, and medical diagnosis that they would have met criteria at TOD. Evidence for disorders during the lifetime and as well as those in the last month of life were evaluated. All members of the team individually reviewed all of the data collected by the clinical social worker and determined preliminary diagnoses. A board certified clinical psychologist and psychiatrist met with the clinical social worker to review preliminary diagnoses and seek a consensus diagnosis. If there were any discrepancies between the team members regarding the preliminary diagnoses, the diagnostic criteria and subject characteristics were reviewed jointly and a consensus diagnosis was determined. The diagnoses included mental disorders and/or personality disorders. Medical conditions and any contributing social/environmental factors were noted and incorporated, where applicable, into the diagnostic criteria.

Once diagnoses were agreed upon, a research assistant performed a comprehensive review of all available records to assess for risk and protective factors, including indicators of social support, fear of death, cancer diagnosis and treatment, as well as any history of psychiatric disorders. The final results for each participant were recorded on individual scoring charts. A graduate student in a clinical psychology doctoral program scored 20% of the charts and interrater reliability was assessed.

Results

Risk and protective factors for suicide in cancer patients were assessed by comparing individual who died by suicide or natural causes on several dependent measures. Statistical analyses were conducted with SPSS version 22.0. Chi-square analyses were used to examine categorical variables such as demographic variables and cancer characteristics. Independent t-tests were used to examine continuous variables such as age at TOD. Analyses revealed several trends that did not reach statistical significance.

Cancer patients who died by suicide and natural causes were similar on demographic features (see Table 1). No significant between-group differences were observed in the average age, race, gender, or marital status of the decedents. The mean age of suicide decedents was 66.67 (SD = 15.43) and the mean age of cancer patients who died by natural causes was 59.33 (SD = 7.30; *ns*). Both groups were primarily composed of subjects who were white, male, married, and had

Table 1: Comparison of Demographic Characteristics of Suicide and Natural Death groups

Characteristic	Suicide Group 9	Natural Death Group 9
Sex		
Male	67%	78%
Female	33%	22%
Race/ Ethnicity		
Caucasian	78%	100%
African American	11%	0%
Asian	11%	0%
Marital Status		
Married	45%	45%
Never Married	22%	22%
Divorced	11%	33%
Widowed	22%	0%
Age		
Mean (SD)	66.6 (15.4)	59.3 (7.3)

children.

Cancer characteristics were compared across the groups regarding when the subjects were first diagnosed with cancer, recent hospitalization due to medical causes, and current chemotherapy treatment (Table 2). No significant between-group differences were observed based on timing of the first cancer diagnosis within the past 6 months (χ^2 (1, 18) = 1.29, ns). No significant between-group differences were observed based on the number of recent hospitalizations in the suicide decedent and natural death subsamples (χ^2 (1, 18) = 1.29, ns). The suicide decedent group and the natural death group did not significantly differ on rates of current chemotherapy treatment (χ^2 (1, 18) = 1.06, ns). No between-group differences were observed in rates of additional medical illnesses at time of death between the suicide group and natural death group (χ^2 (1, 18) = 1.06, ns). Suicide decedents and cancer decedents showed similar levels of pain at time of death (χ^2 (1, 18) = 1.29, ns) and utilized similar amounts of pain medication (χ^2 (1, 18) = 0, ns). The medical or natural death decedents had a higher rate of financial

burden than the suicide decedents that approached statistical significance (χ^2 (1, 18) = 3.60, p < .06).

Cancer patients who died by suicide or natural causes showed similar levels of social support. There were no significant between-group differences in family support (χ^2 (1, 18) = 1.00, ns). In both groups, over 50% of subjects had evidence of familial support. There were no significant between-group differences in support by friends (χ^2 (1, 18) = 0.0, ns). Both groups evidenced low rates of support by friends.

There were no significant differences in psychiatric morbidity between cancer patients who died by suicide or natural/medical causes (see Table 3). Suicide decedents displayed higher rates of depressive disorders (major depressive disorder, persistent depressive disorder, adjustment disorder with depressed mood, or depression not otherwise specified) that trended toward significance (χ^2 (1, 18) = 3.60, p < .06). Suicide and natural death decedents showed similar levels of chronic depression (χ^2 (1, 18) = 1.00, ns). There were no significant between-group differences in

Table 2: Comparison of Cancer Characteristics

Cancer Characteristics	Suicide Group 9	Natural Death Group 9	χ^2
Recent Cancer Diagnosis	11%	33%	1.29
Recent Hospitalization	33%	11%	1.29
Current Chemotherapy	11%	0%	1.06
Other Medical Illness	89%	100%	1.06
Current Pain	33%	11%	1.29
Current Pain Medication	33%	33%	0.00
Financial Burden Due to Medical Bills	0%	33%	3.60 †

† = $p < .06$

Table 3: Comparison of Diagnostic Characteristics

Diagnoses	Suicide Group 9	Natural Death Group 9	χ^2
Depression	100%	67%	3.60 †
Chronic	22%	44%	1.00
Recurrent	44%	11%	2.49
Alcohol Use Disorder	22%	55%	2.10
Substance Use Disorder	11%	44%	2.49
Psychotic condition	33%	11%	1.29
Anxiety disorder	22%	33%	0.28

† = $p < .06$

rates of recurrent depression (χ^2 (1, 18) = 2.49, *ns*). No between-group differences were observed for diagnoses of alcohol use disorders (χ^2 (1, 18) = 2.10, *ns*) or psychoactive substance use disorders (χ^2 (1, 18) = 2.49, *ns*). There were similar rates of psychotic disorders in the suicide and natural death groups (χ^2 (1, 18) = 1.29, *ns*). Cancer patients who died by suicide or natural causes showed similar rates of diagnoses of anxiety disorders at time of death (χ^2 (1, 18) = 0.28, *ns*).

Discussion

The aim of the study was to evaluate cancer patients who died by medical or natural causes or by suicide, and to identify protective and risk factors for suicide in those who have been diagnosed with cancer. Unlike previous studies that examined suicidality in cancer patients, our study did not find significant differences between patients with a cancer diagnosis at TOD who died by suicide and those who died by natural or medical causes. [5, 7] It is often assumed that all populations that display suicidality exhibit similar characteristics. However, previous studies examining individuals who attempt suicide and individuals who complete suicide have concluded that these populations are significantly different in many aspects including demographic characteristics and method of suicide. [22] The results of this study highlight the importance of differentiating individuals who have suicidal ideation, suicidal behaviors, and those who die by suicide.

There were no statistically significant differences between our two cohorts, but there were several trends in the data that approached significance. Results suggest that a diagnosis of a depressive disorder (Major depressive disorder, persistent depressive disorder, adjustment disorder with depressed mood, or depression not otherwise specified) at TOD may be a signal for increased risk of completed suicide following a diagnosis of cancer. This may be a clinically useful finding that health-care providers should take into account when delivering cancer diagnosis to older adults. Medical providers could make use of quick depression screeners to assess need for further evaluation or referral to mental health providers. Specifically, with the knowledge that a history of depression could hasten the desire for death among patients with terminal cancer, heavy emphasis on the importance of maintaining one's mental health throughout the course of treatment or into the next stages of the disease must be conveyed to the patient. Recurrent depression was not found to be significantly different between both groups. Further research could explore if new onsets of depressive disorders or depression severity presents as a risk factor for suicide in cancer patients.

Another finding that approached significance was a higher likelihood of having a financial burden due to medical bills in the natural death group. Financial burden as a protective factor seems counterintuitive as financial difficulties are associated with suicide risk. [26] One possibility that could account for this trend is that, most subjects in both groups had evidence of other medical conditions. It is unclear as to whether the financial burden is directly related to costs of cancer treatment or whether they are related to other medical conditions. Other potential reasons for this trend is that there is a possibility that individuals who died of medical or natural causes could have had more contact with medical or mental health providers or displayed a higher rate of help seeking behaviors. Future research could investigate the role of help seeking behavior from medical and mental health providers in cancer patients who die by suicide or display suicidal behaviors.

Psychological autopsies of suicide decedents and natural deaths require consent and participation from next-of-kin who provide data while mourning. Suicide, especially among cancer patients, is a rare event. The present study was limited because of the small sample size. The sample size was reduced further when data from decedents who were not known to be aware of their cancer diagnosis were removed from the study. Statistical power is an important factor when attempting to determine statistical differences between populations. Power is the probability that a test will correctly reject the null hypothesis indicated a significant difference. With our current sample size (N = 18) the power (0.56) is insufficient to reject the null hypothesis. For a sufficient power (0.80) the estimated sample size (31.40) would need to be increased approximately 57%. Considering the current level of power in our analyses, results approaching significance are promising. Further research with larger sample sizes are needed to evaluate risk and protective factors in individuals who die by

suicide.

Findings shed light on characteristics that may increase suicide risk in cancer patients. Adults who are diagnosed with cancer may experience similar struggles at similar rates, with the emotional burden of the cancer diagnosis being especially prominent among both groups. It is important for clinicians and physicians to be acutely aware of the risk of suicidal behavior among the terminally ill, providing the resources and therapeutic support that is available for battling severe sickness and psychological distress.

Acknowledgments

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