A Retrospective Study of General Hospital Patients Who Commit Suicide Shortly After Being Discharged From the Hospital

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Objective: To assess the scope of diagnostic screening for suicide prevention in general hospital patients.

Methods: Retrospective medical record review of general hospital patients who committed suicide and matched-control subjects who did not commit suicide shortly after being discharged from the hospital.

Results: The suicide rate was 32 per 100000 patient-years. Eight (73%) of 11 patients who committed suicide were diagnosed with depression, substance use disorder, or both at their last hospital admission compared with 11 (33%) of the controls ($P < .05$). Only 1 of 44 patients (both cases and controls) was referred for psychiatric consultation.

Conclusions: The suicide rate in general hospital patients was almost 3-fold higher than in the general population. Depression and/or substance use disorders were risk factors for suicide. Screening for these disorders may be beneficial for suicide prevention in the general hospital population, but will likely benefit more patients who will not commit suicide.

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Previous studies have suggested that many suicides have medical and psychiatric contacts shortly before committing suicide.\textsuperscript{1,2} Physicians may be in a unique situation to assess suicidal behavior in patients. More studies to identify patients at risk for suicide in different medical settings, including the general hospital, are warranted.

An increased suicide risk has been reported in some medical conditions.\textsuperscript{6,7} Suicide in medically ill people may be linked with comorbid psychiatric disorders, mainly depression and substance use disorder. These disorders are important risk factors for suicide.\textsuperscript{6,7}

In this retrospective medical record study, the feasibility of suicide prevention through diagnostic screening for depression and/or substance use disorders was examined. In agreement with previous studies, we expected to find a higher suicide rate in general hospital patients compared with the general population, higher rates of depression and/or substance use disorders in patients who committed suicide than in control subjects, and underuse of psychiatric consultation.\textsuperscript{8,9}

RESULTS

The suicide rate was 32 per 100000 patient-years. In the Table, demographic, clinical, and toxicologic information of suicides are listed. Mean age (at the time of the hospital admission) of the patients who committed suicide was 45 (SD, 15; range 20-72). Five younger than 45 years of age, 6 were 45 and older. There were 6 men and 5 women, 7 white and 4 black. Seven patients committed suicide within 6 months after being in the hospital. Among suicides, 8 (73%) of 11 were diagnosed with depression, substance use disorder, or both. Other diagnoses were schizophrenia (n=1), atypical psychosis (n=1), and bipolar disorder (n=1). These were comorbid with depression or substance use disorder. No disorders were found in 3 cases. Four suicides were positive for alcohol, cocaine, and/or cannabis. All 4 were diagnosed with substance use disorder in the chart review at the last hospital admission. Diagnostic rates of depression and substance use disorders were compared between patients who committed suicide and controls (data not shown). Depression and/or substance use disorders were found in 8 (73%) of 11 cases vs 11 (33%) of 33 controls ($P < .05$, Fisher exact test). Substance use disorders were the most frequent diagnosis in suicides (6 [54%] of 11 suicides). Depression was detected in 4 (36%) of 11 suicides. Two patients were diagnosed with both disorders. Findings were similar across age, sex, and race, except that depression was found more of-
SUBJECTS AND METHODS

DESIGN

The study population consisted of patients admitted to 3 university hospitals in Mobile, Ala. Two are for adults and 1 is for children and women. None have psychiatric beds. Patients are mostly indigenous and come from Mobile County with a population of about 400,000. Some patients come from surrounding counties for admission to specialized units (eg, the burn or transplantation unit).

A matched case-control study was done. Cases were adult (aged ≥15 years) general hospital patients who were admitted to 1 of the 3 university hospitals in Mobile, Ala, between October 31, 1995, and September 30, 1998, and who subsequently committed suicide (in the same period). Only residents of Mobile County were included. Persons admitted following suicide attempts were excluded from the study as suicide attempters were considered a special group with a higher risk of suicide than other patients. Patients who died in the hospital following a suicide attempt were also excluded.

Controls were general hospital patients who were admitted during the same period (October 31, 1995-September 30, 1998) and for similar reasons but who did not commit suicide (in the same period). Three controls were selected for each suicide case. Matching was done on age, sex, race, primary medical diagnosis, admission period, and admission service in each university hospital. Information was obtained through review of hospital records of the last admission. The study was approved by the institutional review board of the University of South Alabama, Mobile.

SUBJECTS

A complete list of suicides and uncertain deaths among Mobile County residents was obtained from the Alabama Department of Forensic Sciences Mobile Regional Laboratory. Cause of death was determined by the Office of the Medical Examiner, Mobile. Admission data were obtained from the hospital administration. Twelve cases were identified by cross-referencing databases of all suicides (n = 134) and undetermined deaths (n = 14) and by admissions (N = 25,181) to the university hospitals in Mobile between October 31, 1995, and September 30, 1998. Five suicides ten in female suicides than substance abuse (40% vs 20%). Only 1 of 44 subjects (both cases and controls) was referred for psychiatric consultation.

MAIN OUTCOME MEASURES

The suicide rate in general hospital patients of 32 per 100,000 was almost 3-fold higher than in the general populations (12 per 100,000). Most persons who committed suicide after being discharged from the hospital had diagnosable psychiatric disorders, particularly depression and substance use disorders, in agreement with previous suicide studies. Rates of these disorders were higher in cases compared with controls (73% vs 33%; P < .05, Fisher exact test). Only 1 of 44 patients (both cases and controls) was referred for psychiatric consultation.

LIMITATIONS

Only admissions to the 3 university hospitals in Mobile were considered. No comparative data on patient populations in other hospitals in Mobile were available. This limitation should be addressed in future studies by comparing data from different hospital settings with (ie, those in which house staff are usually primary care providers) and without university affiliation.

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It is possible that some admissions were not recorded in the computerized hospital databases owing to errors. Chances that a patient who later committed suicide was omitted from the database is very small, however, owing to the rarity of suicide. Another potential problem is the underrecording of suicides. All verdicts of suicide and undetermined death were made following investigations by the Alabama Department of Forensic Sciences. If the suicides in this study came from the group of undetermined deaths, it is possible that some admissions were not recorded in the computerized hospital databases owing to errors. This is congruent with the notion that psychiatric conditions are often missed in medical records. Findings emphasize the importance of continued efforts to educate hospital physicians about diagnoses, management, and referral of patients with depression and substance use disorders.

Objectives
The elevated suicide rate in general hospital patients suggests the appropriateness of suicide prevention as a separate focus in this setting. Depression and/or substance use disorders were risk factors for suicide, as in other populations. A first step would be to improve early recognition and treatment of these common disorders. Findings emphasize the importance of continued efforts to educate hospital physicians about diagnoses, management, and referral of patients with depression and substance use disorders.

IMPLICATIONS FOR SUICIDE PREVENTION

The fact that only 1 of 44 patients was referred for psychiatric consultation suggests underuse of this service, which agrees with the findings reported in other reports. This is congruent with the notion that psychiatric conditions are often missed in medical patients.

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