Factors Predicting Suicide in Psychotic Patients

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Summary. Death rate and causes of death during a mean period of 5.8 years were investigated in 250 male inpatients with psychotic disorders (DSM-III). Fifty patients died during the observation period. Suicide was confirmed in 11 of these patients and could not be excluded in 7 cases, where the cause of death was reported as uncertain. Clinical and neurobiological characteristics (DST-non-suppression, CSF proteins, and monoamine metabolites) were compared in patients who committed suicide and non-suicide patients of the same age, with or without suicidal behaviour. A highly increased mortality rate was seen among the patients and the rate of suicide was more than 20 times higher than that expected in a normal population of the same age. The estimated annual incidence of suicide was 2.5%, 1.3%, 1.0% and 0.4% for patients with bipolar disorder, paranoid psychosis, major depression and schizophrenic disorder, respectively. The following factors were significantly positively correlated with completed suicide: depressive mood, elated mood, paranoid ideas, and paternal age. All suicides had previously shown suicidal behaviour and the suicide occurred during or shortly after a period of hospitalisation. No correlations were found with age at onset of illness, duration of illness, substance abuse or neurobiological parameters.

Key words: Suicide – Psychoses – Mortality rate – DSM-III diagnoses – Predictive factors

Introduction

Suicide is one of the most common single causes of death. The number of suicides in Sweden each year is about 1600 (National Central Bureau of Statistics, 1985), and around 2000 when uncertain cases are included. Suicide is about twice as common in men as in women. The number of men committing suicide varies by age and was in Sweden, in mean, 36 per 100,000 in 1983. Suicide is not only a tragedy for the family but also a source of deep distress for the attending physician (Chemtob et al. 1988). Since a high percentage of persons committing suicide have previous contacts with public medical services, mainly psychiatry (Allebeck and Allgulander 1990; Åsgård 1990; Kelleher and Daly 1990), it is essential to identify potential risk factors for suicide among patients.

The risk of suicide is considerably increased in patients with certain psychiatric disorders. In a group of manic-depressive patients studied through four decades, 9.3% committed suicide (Tsuang and Woolson 1978). Mixed depressive states show a suicidal incidence of approx. 15% (Miles 1977). Suicide among acute and chronic schizophrenics is more frequent than among the general population (Lindén et al. 1988), and in some studies a highly increased rate has been demonstrated among schizophrenics, especially during the early phase of illness (Allebeck and Wistedt 1986; Allebeck and Allgulander 1980; Hawton and Fagg 1988).

The aim of this prospective study was to search for factors predicting suicide in a male psychotic population with various DSM-III diagnoses, followed for 5–8 years after acute admittance to hospital. Clinical, neurobiological, and anamnestic variables in cases of suicide were analysed and compared with those in patients, with or without anamnesis of earlier suicidal behaviour, who did not commit a complete suicidal action. The mortality rate in the population was calculated. Overall mortality and mortality in suicide were compared with the expected number of deaths in a normal sex- and age-matched population. Clinical characteristics of the patients who had committed suicide during the follow-up period were recorded for further analysis.

Material and Methods

Data at Index Occasion

Patients. The study group included 250 male psychotic patients, aged 16–86 years (mean 42 years), admitted to the Department of Psychiatry, Lillhagen Hospital, University of Gothenburg, during the years 1962–84 and diagnosed according to DSM-III (American Psychiatric Association 1980). The following diagnostic categories were found: schizophrenic disorders (n = 81), bipolar disorder...
(n = 42), major depression (n = 33), substance disorder (n = 25), atypical psychosis (n = 22), dementia (n = 18), paranoid disorder (n = 14), adjustment disorder (n = 7), and unspecified disorder (n = 8).

In total, 404 male psychotic patients were admitted to the ward during the period. One hundred and fifty-four were not investigated with lumbar puncture. Of these 53 cases were not investigated by lumbar puncture for medical reasons and 101 did not give their consent. Comparison of diagnostic distribution in the groups with and without cerebrospinal fluid (CSF) samples showed an overrepresentation of substance disorder among the drop-outs (P < 0.001) and of major depression among the punctured patients (P < 0.05). No other significant difference in distribution of psychotic disorders was seen between patients who did and did not participate in the study.

Maternal and paternal ages at birth were noted in each case, and the number of children per patient was recorded.

Medication. The type of medication at index admission was recorded; lithium, antidepressant drugs, and neuroleptics were analysed separately.

Drug Use. Information on earlier use of alcohol and other substances was obtained from medical records. At the index hospitalisation information on earlier and current drug use was obtained after interviews with the patients, their relatives and from direct observations (clinical, laboratory). The classification “alcohol abuser” required at least two of the following criteria: inability to stop drinking, black-outs, withdrawal symptoms, decreased or increased tolerance, drinking offence, drunken driving, regular daily intake, frequent absence from work due to alcohol. The use of narcotic drugs was recorded. Cannabis, being the most frequently used drug, was noted separately and the patients were categorized according to the frequency of cannabis consumption, i.e. patients without present or previous regular use of cannabis, and patients with a regular intake roughly corresponding to cannabis use on 100 occasions within 12 months.

Current and previous symptomatology was recorded, including depressive symptoms, elation, confusion, paranoid ideas, hallucinations and aggressiveness. Earlier or current suicidal behaviour was recorded, including suicidal thoughts and suicidal attempts. The information was obtained by interview of the patient at the index hospitalisation and from the medical records made at earlier hospitalisations.

The patients were investigated concerning neurobiological parameters, including serum and CSF proteins (total protein, albumin, IgG) and CSF monoamine metabolites (HVA, 5-HIAA, MHPG). The protein levels were determined by use of rocket immunoelectrophoresis (Laurell 1972), and the CSF monoamine metabolite levels by use of mass fragmentography (Andersen et al. 1981). The CSF/serum albumin ratio and the IgG-index were calculated. (Tibbling et al. 1977; Link and Tibbling 1977). The dexamethasone suppression test (DST) was performed in a reduced number of patients before start of treatment (Carroll et al. 1981), whereby 1 mg of dexamethasone was given at 11 p.m. and serum samples for determination of cortisol levels were drawn at 4 p.m. and 11 p.m. the following day.

Data at the Follow-Up

The patients were followed until 1 January 1990, corresponding to a follow-up period of 5-8 years from the index occasion. Time and cause of death were recorded for the patients who died during the observation period. The data concerning causes of death were obtained from the National Central Bureau of Statistics (National Central Bureau of Statistics, 1985). Definite suicide referred to an act in which suicide was possible but the evidence of intent to end life was inconclusive. The mode of suicide was recorded and classified as violent or non-violent (Åsberg et al. 1976). Periods of hospitalisation of the suicide cases were obtained from hospital registers. Cases of suicide were compared with patients of the same age, with and without suicidal behaviour, alive throughout the observation period concerning data sampled at index hospitalisation. In addition, the duration of illness, length of time after index episode and after last hospitalisation before death in suicide cases were determined.

Statistical Methods. The comparisons of clinical, psychopathological and neurobiological data obtained at the index hospitalisation were made between 187 age-matched living patients and 11 suicides at the follow-up. The correlation analyses were performed by Pitman's nonparametric test (Bradley 1968).

The expected number of deaths was calculated for the patients with the assumption that their death hazard function coincided with that of the male normal population in Sweden (given in the series “Population Changes” (Part 3), Official Statistics of Sweden) as incidence per 100000 for age interval per year. The expected number of suicides was calculated in the same manner (National Central Bureau of Statistics, 1985). Each patient contributed to the expected number from the index period in 1982–84 to his death, or to 1 January 1990. The observed and the expected numbers were compared using the Poisson distribution, which was also applied for the determination of confidence intervals for risk ratios. Two-sided tests were used.

Results

Mortality

Table 1 shows the estimated risk ratios in the entire study population and in different diagnostic groups. The mortality was significantly higher among the patients than in the normal population (P < 0.001). The observed number of deaths was 50, and the expected number 11.5. The 95% confidence interval of the risk ratio (death hazard of patients to death hazard of the normal male population) was 3.2–5.7, and the estimated value was 4.3. The excess mortality of our patients was of the same magnitude as that seen in groups of patients with malignancy.

The number of suicidal deaths was 11, which was significantly higher than the expected number 0.50 (P < 0.001). The 7 further cases which might be suicides were not included in these calculations. The estimated risk ratio to the suicide hazard functions (patients to normal population) was 22, and the 95% confidence interval 10.8–39.4.

The risk of dying in suicide was significantly increased in patients with bipolar disorder, major depression, and schizophrenic disorders, and also tended to be so in patients with paranoid disorder. The incidence of suicide was more than 60 times increased in patients with bipolar disorder, about 30 times increased in patients with paranoid disorder or major depression, and 10 times increased in the schizophrenic patients (Table 1).

Death Rates

Fifty of 250 patients died during the observation period. Eleven patients committed suicide and 32 died a natural