

Suicides in Men With IDDM

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OBJECTIVE— To investigate the occurrence of suicide in men with insulin-dependent diabetes mellitus (IDDM).

RESEARCH DESIGN AND METHODS— A cohort of all Danish men born between 1949 and 1964 (including 1964) who were diagnosed with IDDM before age 20 ($n = 1,682$) was ascertained earlier. Follow-up from diagnosis to death or 1 January 1991 was based on record linkage with the Danish Civil Registration System and was supplemented with information from death certificates obtained from the Danish National Registry of Deaths. From published vital statistics, cause-specific standardized mortality ratios (SMRs), adjusted for age and calendar time, were calculated.

RESULTS— Among the 168 deaths recorded during follow-up, 15 took place in connection with the onset of IDDM and have been excluded. Of the remaining 153 deaths, 12 were officially classified as suicides ($SMR\ 12/7.48 = 1.6, 0.05 < P < 0.1$); as for the age-group of 20–24 years, SMR was 2.98, $P < 0.05$. Furthermore, all deaths officially classified as attributable to unknown causes ($n = 28$) and accidents ($n = 22$) were reviewed with respect to unrecognized suicides; as for deaths of unknown causes, three could be reclassified as probable suicides and two as possible suicides, whereas one of the deaths caused by accident could be reclassified as possible suicide.

CONCLUSIONS— Young men with IDDM may confer a higher risk of suicide than expected. Furthermore, suicide may represent an underestimated cause of death among patients with IDDM.

The presence of a chronic somatic disease is associated with an increased suicide risk (1,2). This has been shown in patients suffering from chronic nonmalignant conditions such as

epilepsy, multiple sclerosis, and spinal cord lesions (2).

Diabetes is a chronic disease with a considerable psychological impact on the patients. The emotional trauma at

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IDDM, insulin-dependent diabetes mellitus; SMR, standardized mortality ratio.

diagnosis, the need for a tedious regime of treatment, control, and diet, and the risk of complications may have a profound effect on the patients' mental state (3). In most studies of psychiatric disorders in diabetic patients, an increased risk of depression has been demonstrated (4). Accordingly, diabetic patients may have a greater risk of suicide compared with nondiabetic individuals. For patients suffering from a chronic disease such as insulin-dependent diabetes mellitus (IDDM), suicide statistics may not be reliable. Sudden and unexpected deaths among patients with chronic somatic diseases may in some cases be regarded as a natural death and not as a suicide, and it has been shown that some patients whose deaths were attributed to hypoglycemia had personality problems or psychiatric disorders and had attempted suicide earlier (5).

RESEARCH DESIGN AND METHODS

This study was part of a survey of mortality in a cohort study of IDDM. All male Danish citizens must appear before the conscript board for examination and assessment for military and civil service, before their 20th birthday. The presence of IDDM implies unconditional exemption from such duties. All men who were born between 1 January 1949 and 31 December 1964 and were rejected by the conscript board because of diabetes or suspected diabetes were identified from the files of the National Service Conscript Board Registry. The Danish National Registry of Deaths was searched to identify anyone from these birth cohorts who had died before conscript board examination with diabetes mentioned on the death certificate. Hospital records and information from general practitioners were scrutinized to verify diagnosis and gather information about clinical characteristics. By following these procedures, a cohort of men with IDDM, which is more than 95% complete, has been ascertained (6).

By the end of December 1990, all

cases in the cohort were updated regarding status as living, dead, or emigrated, and date of death or emigration was obtained from the Danish Civil Registration System. All death certificates are registered in the Danish National Registry of Deaths, with actual and underlying causes of death recorded. All deaths attributable to unnatural (accidents, homicides, suicides) or unknown causes have been investigated by the local police and the local health authority who eventually determine the cause of death. The death certificates of the diabetic cohort members who died in Denmark were collected and scrutinized by two of the authors to obtain information about cause-specific mortality and estimate age- and cause-specific mortality ratios. Age-standardized mortality ratios for various causes of death in the diabetic cohort were calculated compared with the mortality in the general Danish population, which can be derived from the Danish Vital Statistics. The mortality ratios have been calculated in the various age-groups and stratified for various subgroups according to diabetes duration at time of death.

All death certificates with accidents and unknown causes of death mentioned were scrutinized to reclassify potentially wrongly classified deaths. A

death may be reclassified as probable suicide because of use of a violent method (hanging, shooting, etc.) or severe poisoning (carbon monoxide, cyanide, barbiturates) or the existence of a farewell letter. In cases where reclassification is based on information about various personal problems (depressive behavior, expressed suicide wish, or earlier suicide attempt, economic/social problems, drug and/or alcohol addiction) or presence of alcohol and/or drugs in blood of the dead or empty bottles nearby, at least two of these have to be present to reclassify a death as a possible suicide.

RESULTS— The total cohort consists of 1,682 men diagnosed with IDDM before age 20. At the time of follow-up, 168 men were dead. Of these, 15 were dead in connection with the diagnosis of the disease and have been excluded from the present analysis. Among the remaining 153 deaths, a total of 12 certificates with suicide as the main cause of death were found (expected 7.48), standardized mortality rate (SMR) $12/7.48 = 1.6$. (χ^2 1 df = 2.81, $0.05 < P < 0.1$). In the age-group of 20–24 years, the SMR was significantly increased (SMR = 2.98, χ^2 1 df = 7.87, $P < 0.05$) (Table 1). Three men had used insulin as a suicide method, four had used violent methods,

and five had used potent poisons. Before their suicide, many of these men had expressed suicidal wishes, had been depressed, or had had various problems, such as social, familiar, economic, or problems with alcohol and/or drugs.

Twenty-eight death certificates with unknown causes of death (expected 0.83) and 22 with accidents as causes of death (expected 17.97) were found. Based on the death certificates with unknown causes of death, three were classified as possible suicides and two as probable suicides. One of the accidents could be classified as a probable suicide.

CONCLUSIONS— Despite the apparently sparse number of deaths, this is the largest population-based study of suicide in patients with diabetes published (7–10). In conclusion, the risk of suicide seems to be increased in Danish men with IDDM in the age-group of 20–24 years with disease onset at 15–19 years of age. For all men in the study (ages 15–39), a tendency toward an increased suicide risk was found. Follow-up of this cohort will be important because some of them are still young and certainly not past the age of risk for the onset of depression and suicide.

The Danish suicide statistics previously have been found to be reliable

Table 1—Observed versus expected suicides grouped by age at onset of IDDM and age at death

| Age at death (years) | Age at onset of IDDM (years) | | | | | | | | | | | | | | | | χ^2 |
|----------------------|------------------------------|-----|------|---------------|-----|------|---------------|-----|------|---------------|-----|------|---------------|-----|------|---------|----------|
| | 0–4 | | | 5–9 | | | 10–14 | | | 15–19 | | | Total | | | | |
| | Years at risk | Obs | Exp | Years at risk | Obs | Exp | Years at risk | Obs | Exp | Years at risk | Obs | Exp | Years at risk | Obs | Exp | Obs/Exp | |
| 15–19 | 1,044.5 | 1 | 0.07 | 1,991.0 | 0 | 0.14 | 2,089.5 | 0 | 0.20 | 1,277.0 | 0 | 0.09 | 7,203.5 | 1 | 0.51 | 1.96 | 0.47 |
| 20–24 | 1,014.0 | 1 | 0.24 | 1,953.5 | 1 | 0.45 | 2,856.0 | 1 | 0.66 | 2,343.0 | 3 | 0.66 | 8,166.5 | 6 | 2.02 | 2.98 | 7.87* |
| 25–29 | 844.5 | 0 | 0.29 | 1,647.0 | 2 | 0.56 | 2,439.0 | 1 | 0.82 | 2,034.5 | 0 | 0.69 | 6,965.0 | 3 | 2.36 | 1.27 | 0.17 |
| 30–34 | 467.0 | 0 | 0.20 | 959.0 | 0 | 0.40 | 1,442.0 | 0 | 0.61 | 1,244.5 | 1 | 0.53 | 4,112.5 | 1 | 1.74 | 0.57 | 0.31 |
| 35–39 | 152.0 | 0 | 0.07 | 404.5 | 0 | 0.18 | 589.0 | 0 | 0.26 | 580.0 | 1 | 0.26 | 1,725.5 | 1 | 0.77 | 1.3 | 0.07 |
| Total | 3,522.0 | 2 | 0.88 | 5,163.0 | 3 | 1.75 | 9,415.5 | 2 | 2.57 | 6,379.0 | 5 | 2.24 | 21,690.0 | 12 | 7.43 | 1.61 | 2.81† |

Years at risk, number of IDDM years at risk of death. Obs, observed number of suicides; Exp, expected number of suicides.

* $P < 0.05$.

† $0.05 < P < 0.1$.

(11), but the fact that six deaths in our study that were not officially classified as suicide might be regarded as suicides suggests a possible considerable under-registration of suicides in people with diabetes. Problems with classification of the cause of death in patients with IDDM have been mentioned previously (5,12,13). Some of these problems may be because these patients have opportunities for self-destructive behavior, unknown to other individuals, e.g., administering doses of insulin that are too high or too low, neglecting diet, abusing alcohol, etc. (14). Therefore, their deaths may be classified as natural and not as suicides. If so, our data express just the tip of the iceberg.

If the reclassified suicides were included in our analysis, the SMR would be increased to 2.42. To be able to make a proper comparison one ought to reclassify death certificates on the entire general Danish population also, but this is, of course, not possible. This would, however, not affect our conclusion to any major extent because less than one death from unknown causes was expected in our patient sample.

Our study has shown that many of the patients who committed suicide or whose deaths were classified as potential suicides were depressed, addicted to alcohol or drugs, and had social and economic problems. In addition, in some cases, suicidal thoughts or previous suicide attempts had been seen. These problems are well-known risk factors of suicide in general (15). To prevent at

least a part of such suicides, it is of great importance that diabetic patients with depression are recognized and treated appropriately (16,17).

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