



Suicide attempts in Multiple Sclerosis

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Abstract

The purposes of the study was to estimate the risk of suicide attempts in MS Patients in Denmark and to estimate the risk of suicide attempts in MS patients receiving immunomodulating therapy compared to untreated patients.

Methods and material: The Danish MS Registry, the Danish MS Treatment Registry and the Suicide Attempt Registry are linked and merged together using a person identification number given to all persons residing in Denmark.

Results: Among 404 MS patients, 15 patients had attempted suicide. Though, no increased risk for suicide attempt was found in MS patient. Moreover, no difference in number of suicide attempts in treated and untreated patients was found.

Introduction and purpose

Earlier studies of the relationship between multiple sclerosis (MS) and risk of suicide have demonstrated that MS patients have an increased risk of suicide. The risk is increased with a factor 2 even 20 years after the diagnosis of MS (1).

The reported prevalence of depression among MS patients has a great span ranging from 25,1 % to 41,0% (2-4). A number of studies have found a correlation between beta-interferon therapy and the risk of depression and suicide (5). In general, the reported prevalence of depression as well as suicide among MS patients depends on the clinical setting, and the statistical methods of the study (6,7).

Study hypothesis: Based on previous studies documenting an increased risk of depression as well as suicide in MS patients, it is expected that MS patients have an increased risk of suicide attempts. Interferon-Beta treatment is assumed to increase the risk of depression and consequently suicidal behaviour in MS patients.

Purposes of the study: To estimate the risk of suicide attempts in MS patients in the county of Funen in Denmark. To estimate the risk of suicide attempts in MS patients receiving immunomodulating therapy compared to untreated patients

Material and method

Material: We obtained all data for this study from three national population registers in Denmark.

The first is 'The Danish MS Register', established in 1956 based on a nationwide prevalence study of MS. It contains data on all Danes who were prevalent on MS and live in 1949 or have been diagnosed since. On January 1st, 2005 the register included data on 20.652 persons with a valid MS diagnosis of whom 9,377 (3095 men and 6,282 women) were alive (8,9). The completeness and validity of 'The Danish MS Register' is high (90% and 94% respectively).

The second register 'The Danish MS Treatment Register', established in 1996, contains information on MS patients treated with interferon-Beta. Data on all new cases of MS and updated information on MS diagnosed patients are continuously collected and classified according to standardized diagnostic criteria.

The third database is 'The Danish Register for Suicide Attempts' (RSA), an outcome of the WHO research project "WHO/Euro Multicentre Study on Parasuicide" which had the objective of collecting data on suicide attempts from 13 European countries.

Material and method (continued)

RSA is continuously updated in order to estimate trends and identify high-risk groups of suicide attempts. The register was established in 1989 and is updated ultimo 2007. The RSA contains information about people who have been in contact with the health care system in the County of Funen as a result of a suicide attempt, according to the WHO definition of a suicide attempts. Data is obtained from medical and psychiatric hospitals (10).

Method: Using a personal identification number given to all persons residing in Denmark, information from The Danish MS Register, and The RSA in the County of Funen, was merged. Subsequently excess risk of suicide attempts in MS patients in the county of Funen could be calculated. The standard mortality ratios (SMR) for suicide attempt was calculated using survival analysis

With the use of the personal identification number, data from The Danish MS Register, The Danish MS Treatment Register and The RSA was merged. Differences in number of suicide attempts between patients treated with interferon-Beta compared to non treated patients, was calculated.

This study has been approved by the The Danish Data Protection Agency.

Results

Suicide attempt among patients from the Danish MS Register:

From 1991 through 2004, 404 MS patients were residents in the County of Funen in the year of onset of MS. 353 patients had definitive MS, 45 had probable MS according to the Poser criteria and 6 had an uncertain diagnosis.

Among these 404 patients, 15 suicide attempts were recorded. One patient attempted suicide five times (all in the years after diagnosis), one patients had 4 suicide attempts (all before the year of onset), and 6 patients had recorded one attempt of suicide (4 in the year of onset, 1 between year of onset, and year of diagnosis, and 1 after the diagnosis).

Three statistical analysis were made:

- 1: Suicide attempts from year of onset of MS through ultimo 2007
- 2: Suicide attempts from year of MS diagnosis through ultimo 2007
- 3: Suicide attempt from year of MS diagnosis through ultimo 2007 for patients who have MS as a definitive diagnosis

For each group, SMR was calculated, and the results have been age-standardized using 5-6 year age groups.

No statistically difference between observed and expected numbers of suicide attempts has been found (Table 1).

	Observed numbers	Expected numbers	Chi square (The results have been age-standardized)	Max expected numbers
Analyse 1	7	9,56	0,4077	3,39
Analyse 2	6	8,45	0,3995	2,74
Analyse 3	5	7,37	0,3827	2,11

Results (continued)

Suicide attempts in the MS Treatment Register

Among the 404 patients (121 men, 283 women) in 'The Danish MS register' treated with interferon-Beta, 220 (66 men and 154 women) were found in 'The MS Treatment register'. Among the 220 patients in the MS Treatment Register, 8 (3,6 %) suicide attempts were registered, compared to 7 suicide attempts (3,7%) among the 183 patients in the non-treated group. Subsequently, no differences in the prevalence of suicide attempts, was found between the two groups.

The statistical analysis; source of error

The largest source of error in the analysis is the calculation of the expected number of suicide attempts, as the population of MS patients is not censored if the patient either dies or moves from the County of Funen. As a consequence the estimate of expected number of attempted suicides for MS Patients is too high. To estimate the size of this problem, the following analysis has been conducted:

Based on the observed number of attempted suicides in the population, the maximum expected number of suicide attempts in the population has been calculated, for which a χ^2 test (unilateral) returns a p-value less than 0.05. The results are given in Table 1 above, showing that the impact of this source of error is modest.

Conclusions

Based on the results of the study, it can be concluded that MS patients, contradicting our hypotheses, do not have an increased risk of suicide attempts.

The small cohort and the choice of not censoring in case of dying or moving, increase the risk of type 2 errors. The authors, however, still conclude that the results of the study are reliable.

Beta-interferon treatment has been expected to increase the risk of depression in MS patient and consequently an increased risk for suicidal behaviour. This study, however, shows that treated patients do not have an increased risk of suicide attempt compares to untreated patients. In the latest study demonstrating an increased risk of suicide among MS patients, data is updated until ultimo 1996, the same year as Beta-Interferon treatment was introduced. Better care for MS patients after introduction of immunomodulating treatment can be a part of the explanation for the result of this study. Future studies could look in to whether MS patients after 1996 likewise have an increased risk of suicide.

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