

# Suicide risk in Huntington's disease

Luigi Di Maio, Ferdinando Squitieri, Gioacchino Napolitano, Giuseppe Campanella, James A Trofatter, P Michael Conneally

### Abstract

**In order to evaluate the relevance of suicide risk in families affected by Huntington's disease (HD), 2793 subjects registered with the National Huntington's Disease Research Roster were studied. Suicide was the reported cause of death in 205 subjects (7.3%). This group included affected and possibly affected subjects, subjects at 50% and 25% risk, possibly at risk subjects, and normal relatives. In all categories suicide was more frequent than in the general US population. The data suggest that suicide is quite frequent in some families with HD. This increased suicide risk must be carefully considered in planning genetic counselling for predictive testing in HD.**

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Department of Medical and Molecular Genetics, Indiana University School of Medicine, Indianapolis, USA.  
L Di Maio  
J A Trofatter  
P M Conneally

Clinica Neurologica II, Seconda Facoltà di Medicina, Università di Napoli, Via Pansini 5, 80131 Napoli, Italy.  
F Squitieri  
G Napolitano  
G Campanella

Correspondence to Professor Campanella.

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"The tendency to insanity, and sometimes that form of insanity which leads to suicide, is marked. I know of several instances of suicide of people suffering from this form of chorea, or who belonged to families in which the disease existed" (George Huntington<sup>1</sup>). Despite Huntington's original statement, suicide has been considered a rare feature of Huntington's disease (HD).<sup>2,3</sup> Although a high frequency of suicide has been reported in HD,<sup>4-7</sup> particularly in some affected families,<sup>8,9</sup> none of these observations was made in a large population. Furthermore, suicide risk has not been investigated in at risk subjects. Suicide frequency was evaluated in 1338 families collected by the National Huntington's Disease Research Roster (NHDRR) at Indiana University.

### Subjects and methods

The NHDRR collects and maintains information about HD families including family history and clinical data. Data are collected by a Family History and Affected Questionnaire. These questionnaires were designed to elicit specific family history and clinical data and are usually completed by a family member other than the patient.<sup>10,11</sup> Cause of death was ascertained in 3620 subjects recorded in the NHDRR archives. Information was analysed from 2793 subjects whose cause of death was other than perinatal injuries. Suicide frequency was evaluated in subjects grouped according to affected status (table 1). Other study variables included onset age, disease duration, and age at death. Suicide frequency in the general US population was obtained from the US National Center for Health Statistics. It was not possible to establish the percentage of HD families from the US population registered at the Roster. Statistical analysis was performed by the SPSS-x package, and some comparisons were performed by Student's *t* test.

### Results

The results are shown in figs 1 and 2 and in tables 2 to 4. Fig 1 shows suicide frequencies among groups with differing HD risks. Table 2 reports suicide frequency among HD families and patients in five year periods. These data are compared with suicide frequencies in the US population from 1935 to 1969. Of the 205 reported suicides, the sex ratio was 3.06/1 (males/females); this was similar to that of suicides in the US population which varied from 2.4/1 to 3.6/1. Although suicide clearly seems more frequent in HD families than in the general population, the two sets of data are not fully comparable for at least two reasons. First, 60 suicides in HD families were committed in an unknown year (table 2), and therefore the percentage of suicide in HD in five year periods is an underestimate. Second, the denominator of HD families is arbitrary, since family members are included on the basis of one relative's report, which may be incomplete. This bias might overestimate the rate of

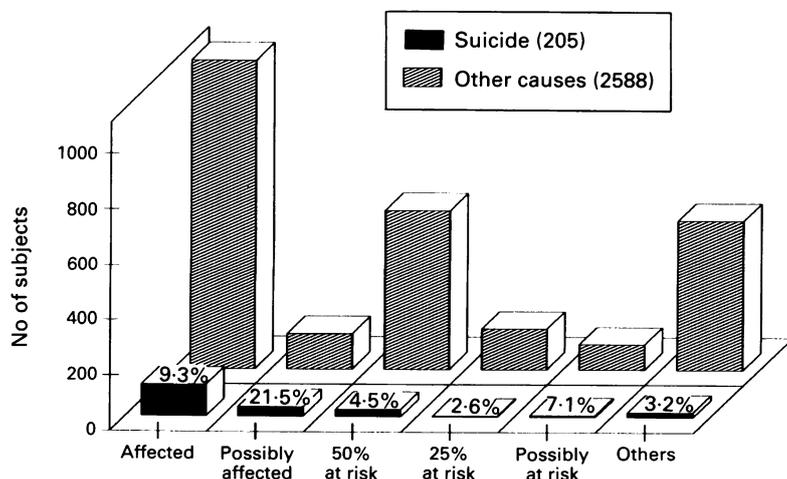


Figure 1 Suicide and other causes of death among the sample group. Black bars show % suicide of total number of deaths for each group.

Table 1 Subjects studied by affected status.

(1) Affected	Clinical examination positive for HD
(2) Possibly affected	Clinical examination with some signs of HD, not sufficient for a final diagnosis
(3) At 50% risk	Children of affected subjects
(4) At 25% risk	Children of subjects at 50% risk
(5) Possibly at risk	Children of possibly affected subjects
(6) Other	Spouses and family members with no risk

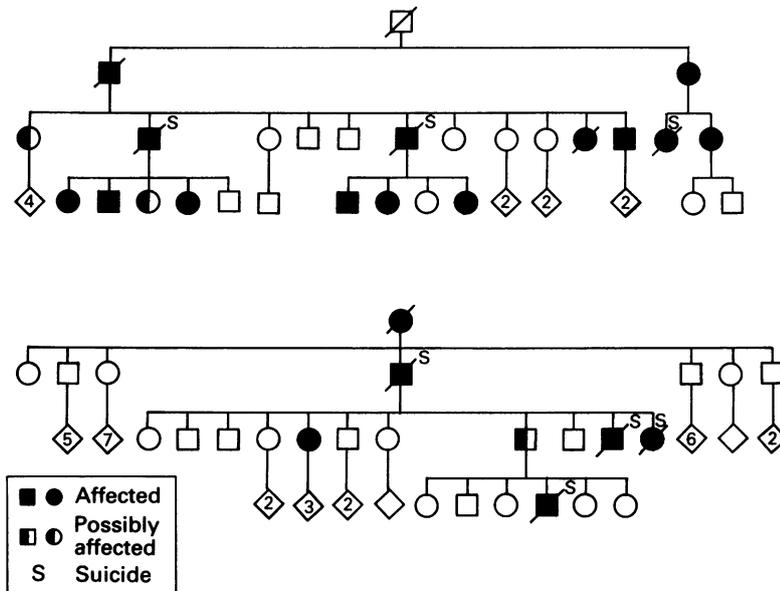


Figure 2 Pedigrees of two families in which several cases of suicide occurred.

Table 2 Retrospective analysis of suicide in HD families and patients. Data derived from NHDRR.

Year of death	No of suicides in HD families*	No of suicides in HD patients*	% of suicides in US population†
1815-99	1 (1.25)	—	—
1900-04	2 (2.5)	—	—
1905-09	0	—	—
1910-14	2 (6.3)	1 (11.1)	—
1915-19	1 (1.8)	1 (6.6)	—
1920-24	3 (4.8)	2 (10.5)	—
1925-29	1 (1.6)	1 (4.8)	—
1930-34	6 (8.0)	3 (8.5)	—
1935-39	8 (8.1)	5 (17.2)	1:3
1940-44	7 (7.1)	5 (9.8)	1:1
1945-49	7 (5.7)	6 (9.3)	1:1
1950-54	3 (2.3)	3 (4.7)	1:0
1955-59	9 (6.3)	6 (8.4)	1:2
1960-64	12 (8.0)	10 (11.9)	1:1
1965-69	19 (9.0)	8 (6.6)	1:1
1970-74	18 (8.4)	11 (8.3)	—
1975-79	20 (10.1)	13 (10.4)	—
1980-84	18 (9.8)	10 (9.5)	—
1985-87	8 (25.8)	5 (29.4)	—
Year unknown	60	24	—
Total	205 (100)	114 (100)	—

\* % of total suicides in brackets.

† This percentage is calculated from the ratio between the number of suicides and total number of deaths (data from Vital Statistics of the United States).

Table 3 Comparison of onset age, disease duration, and age at death between patients who committed suicide and those who died from other causes.

	Onset age (y)	Disease duration	Age at death
Affected subjects who committed suicide	37.8 (8.4)* (52)	8.6 (6.2) (44)	46.9 (9.9) (83)
Affected subjects with other causes of death	37.9 (11.4) (717)	16.8 (7.9)† (638)	54.9 (13.0)† (859)

\* Mean (SD). (No of patients in brackets below.)

†  $p < 0.0001$ .

Table 4 Possible familial predisposition to suicide in HD.

- (1) 40 out of 143 (28%) families had 99 out of 205 (48%) cases of suicide.
- (2) Occurrence of suicide:
  - (a) in 1 parent and in 1 child = 6 couples  
(6 affected, 2 possibly affected) } 24 subjects
  - (b) in 1 parent and 2 children = 4 triplets  
(5 affected, 6 possibly affected, 1 at 50% risk)
- (3) Occurrence of suicide:
  - (a) in two sibs = 8 couples  
(13 affected, 3 at 50% risk) } 25 subjects
  - (b) in three sibs = 3 triplets  
(6 affected, 1 possibly affected, 2 at 50% risk)
- (4) Mean size of sibships:
  - (a) with 1 case of suicide = 4.3 subjects
  - (b) with 2 or more cases of suicide = 8.6 subjects

suicide in HD families. The suicide ratio in HD patients is reliable, since they constitute a homogeneous group, but suicide is certainly underestimated in this group because of the 24 suicides in unknown years.

Table 3 shows the comparison of onset age, disease duration, and age at death in HD patients who committed suicide and in those who died from other causes. Onset age is identical in both groups, while disease duration and age at death are significantly lower in patients who committed suicide than in the other group.

Age at death for those who were at 50% risk was also calculated. The mean age at death was 33.5 (SD 13.8) years in the 17 subjects who committed suicide, while it was 40.2 (SD 23.0) years in the 309 who died from other causes; this difference is not significant. Mean onset age in 769 affected subjects of our sample was 37.9 (SD 11.2) years. A statistical comparison of age at death in the suicide group of subjects at 50% risk with onset age of HD patients was not significant. These data show that in subjects at 50% risk suicide might occur at an age very close to onset age of HD.

The sex of affected parents of subjects who committed suicide ( $n = 197$ ) was also examined. There was an equal distribution of mothers (41.1%) and fathers (41.6%). In the remaining 16.8%, the sex of the affected parent was unknown.

Table 4 shows a possible predisposition to suicide in some HD families. Fig 2 shows two pedigrees with several suicide cases.

## Discussion

The frequency of suicide is higher in patients with HD and in their relatives than in the general US population. Although it is impossible to calculate the exact suicide ratio between patients and family members and the US population, our data show an increased frequency in all risk categories of HD family members including patients' spouses.

Some data suggest a possible 'carrying effect', that is the occurrence of further cases of suicide in the same family after a first suicide, but this phenomenon also occurs in families without HD.<sup>12</sup>

The comparison of suicide age and onset age of HD shows that in at risk subjects suicide may occur at the first appearance of HD symptoms, which in several cases was depression. Since many at risk subjects ask for genetic counselling and DNA analysis when they are near this critical age, it is necessary to consider carefully the possibility of an increased suicide risk.

In the infantile and juvenile forms of HD the affected parent is the father about four times more often than the mother.<sup>13</sup> Parental transmission was not relevant to suicide risk in our sample.

Attempted suicide was not considered in this study, but was evaluated in another study with a different questionnaire. The analysis also showed a high rate of attempted suicide among HD patients.<sup>7</sup>

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