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Stable low prevalence of Huntington's disease in Finland

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Huntington's disease (HD) is a dominantly inherited neurodegenerative disorder caused by an expanded cytosine-adenine-guanine (CAG) repeat in the *HTT* gene. The prevalence of HD varies markedly, at least partly because of differences in frequencies of chromosome 4 haplotypes, some of which carry a higher risk of CAG repeat expansion in meiosis [1,2]. The prevalence of HD has apparently increased in Caucasian populations during the past decades, but robust evidence of increasing incidence is lacking [3].

We have reported that the minimum estimate of HD prevalence was 2.12/100,000 (95% CI: 1.77–2.54) in Finland in 2010 [4], which is over 4-fold the prevalence reported in the 1980s [5]. In addition, new diagnoses had increased after genetic testing became available, but the increase tapered off after the year 2005. In the present study we investigated the trend in HD epidemiology between 2010 and 2020 in Finland.

The cohort from our previous study was now augmented with new patients that were included, if their diagnosis of G10 had been entered in the Care Register of Healthcare (CRHC) between 1 January 2011 and 31 December 2020. CRHC is the national, mandatory registry containing information on all in- and outpatient care episodes in Finnish hospitals. Our previous study revealed a high frequency of false positive cases in the administrative data and, therefore, current search was confined to the medical specialties of child neurology and adult neurology and to hospitals. The prevalence in the province of Åland (population, 30,129) was not included, because it was found to be a clear outlier in the previous data and because many patients from the province acquire care from Sweden. Dates of death and the population figure on the prevalence date (31 December 2020; population, 5.50×10^6). were obtained from Statistics Finland. The study was approved by the ethics committee of the Hospital District of Southwest Finland (19/180/2010) and national authorization was granted by Finnish Social and Health Data Permit Authority Findata (THL/3940/14.06.00/2022).

Our previous research had revealed 114 patients with HD that were alive on December 31, 2010. The CRHC search now yielded 129 additional patients with a G10 diagnosis recorded between 2011 and 2020. Of the 243 persons, 142 were alive on the prevalence date giving 2.57/100,000 (95% CI: 2.16–3.02) as the maximum estimate of HD point prevalence.

We were unable to verify the new diagnoses, and in consequence, we report here a maximum estimate of prevalence, whereas we previously reported a minimum estimate. Review of the patient records review was planned to confirm the diagnoses in a similar fashion to that in our previous study, but the unexpectedly high cost precluded the data retrieval. Patients from the province of Åland were not included in the present cohort and, therefore, we calculated that the comparable prevalence in the previous cohort was 1.98/100,000 (95% CI 1.62–2.40). The absolute difference between the estimates was 0.59/100,000 and the confidence intervals were overlapping suggesting that the prevalence has remained unchanged. The high proportion of false positive HD diagnoses in the previous study suggests that the true number of new cases in the present study is considerably smaller than 129. The advent of genetic testing increased the annual number of new diagnoses, but it seems that this increase was transitory. On the other hand, the lack of data from the province of Åland suggests that some new patients were missed in the present search. In our previous cohort, 12 new patients were identified in Åland during the 24-year study period making it unlikely that the number of new diagnoses between 2011 and 2020 would alter our results. We conclude that the prevalence of HD has not increased in Finland during the last decade and that HD remains less frequent among Finns than in other Caucasian populations [6]. The paucity of the *HTT* haplotypes prone to meiotic expansion may set an upper limit of 1.5–2.5/100,000 for HD prevalence in Finland [1,2,4].

Author contributions

(1) The conception and design of the study, or acquisition of data, or analysis and interpretation of data.

(2) Drafting the article or revising it critically for important intellectual content.

(3) Final approval of the version to be submitted.

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Hospital. The sponsors had no role in study design, data collection, data analysis, data interpretation or writing of the article. The authors had full and unimpeded access to all data and the final responsibility for the decision to submit for publication.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Jussi O.T. Sipilä has received a research grant (Maire Jokinen foundation) and holds shares (Orion Corporation). Kari Majamaa has nothing to disclose.

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