Survival in memory clinic cohort is short, even in young-onset dementia

INTRODUCTION

Patients with dementia have a shorter life expectancy compared with the general population. Survival time after diagnosis varies greatly however, with reported median survival times between 3 and 12 years.[1 2] This variation could be due to many factors, such as type of dementia, patient characteristics and change in management over time.[3 4]

We aimed to study median survival times after a dementia diagnosis in a memory clinic-based cohort across different types of dementia, mild cognitive impairment (MCI) and subjective cognitive decline (SCD). Furthermore, we studied how age and sex influenced survival times. Finally, we studied whether median survival has changed over the past decades.

METHODS

From the Amsterdam Dementia Cohort,[5] we included 4495 subjects with a baseline visit between 2000 and 2014 and a diagnosis of any type of dementia (n=2625), MCI (n=739) or SCD (n=1131) who served as controls. The group of patients with dementia included 1690 dementia due to Alzheimer's disease (AD), 399 frontotemporal dementia (FTD), 165 vascular dementia (VaD) and 192 dementia with Lewy bodies (DLB). There were 179 with more rare causes of dementia, summarised as 'other dementias'. The study was approved by the local Medical Ethical Committee.

Information on mortality was obtained from the Dutch Municipal Register (accessed 14 September 2017). Survival duration was defined as years between date of baseline diagnosis and date of death or, when still alive, years between date of baseline diagnosis and 14 September 2017.

We determined median survival times using Kaplan-Meier analyses, per diagnosis and stratified for age and sex. Furthermore, we assessed whether median survival in our cohort had changed over the past decades. Finally, for illustrative purposes, we compared median survival per decade for dementia due to AD and non-AD (pooling FTD, VaD, DLB and other more rare causes of dementia), with median survival in the general Dutch population in 2000 and 2010. Detailed methods are provided in online supplementary file 1.

RESULTS

Online supplementary table 1 presents the baseline characteristics of the patients according to diagnosis. Overall, mean age was age 66±10, 2018 (45%) were women and the mean Mini-Mental State Examination score was 24±5. After a follow-up of 6.2±3.4 years, 2072 (46%) patients had died and 2423 (54%) were still alive.

As for all types of dementia more than half of patients had died, we were able to determine a very precise estimate of median survival times. Median (95% CI) survival time across the total group of dementia was short with 6.0 (5.8–6.2) years. Median survival time depended on the type of dementia, ranging from 6.4 (5.8–7.0) years in FTD, 6.2 (6.0–6.5) years in dementia due to AD, 5.7 (4.1–7.3) years in VaD, 5.1 (4.5–5.7) years in DLB to 3.6 (3.2–4.0) for more rare causes of dementia (including Creutzfeldt-Jakob's disease) (figure 1A and online supplementary table 2). When comparing younger (≤65 years) and older (>65 years) patients, median survival time hardly differed. Survival was shorter in men for most types of dementia, except for FTD, where women had shorter survival.

Subsequently, we evaluated how median survival estimates changed over time (cohort effect). Online supplementary table 3 shows that median survival time increased from 5.3 (4.8–5.7) in 2000 to 6.4 (5.6–7.3) years in 2010 (p.020). When we stratified for age, we observed that this effect seemed to be specific for late-onset patients, while in young-onset patients this trend over time was not observed.

Finally, we plotted median survival estimates in 2000 and 2010 by age bin in the general Dutch population next to patients with dementia due to AD and non-AD in

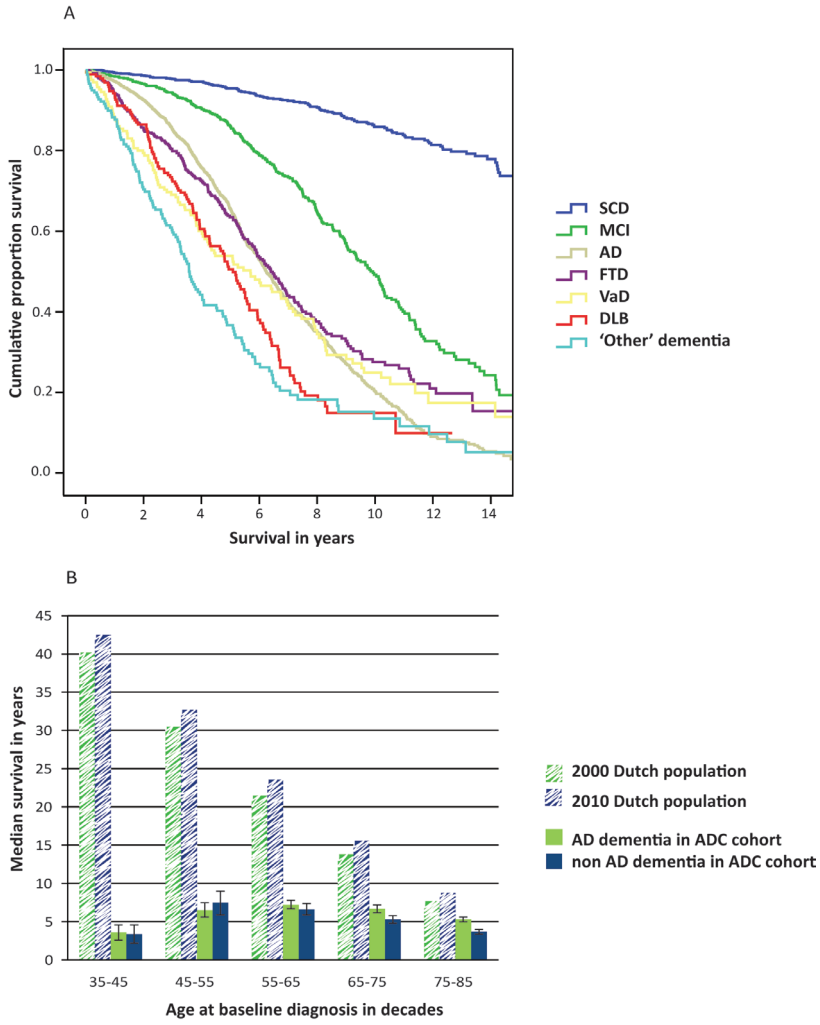

Figure 1 Survival in the ADC, showing in (A) Kaplan-Meier curve, according to baseline diagnosis in the total group; log-rank test is p<0.001, and (B) survival, per age bin, for dementia, compared with survival in the general Dutch population. AD, Alzheimer's disease; ADC, Amsterdam Dementia Cohort; DLB, dementia with Lewy bodies; FTD, frontotemporal dementia; MCI, mild cognitive impairment; SCD, subjective cognitive decline; VaD, vascular dementia. 'Other' dementia consists of more 'rare' causes of dementia; non-AD dementia, pooled data of VaD, FTD, DLB and other dementia. Median survival in the general Dutch population in 2000 and 2010 is shown for illustrative purposes and derived online (https://opendata.cbs.nl/statline/portal.html?_la=nl&_catalog=CBS&tableId=71950ned&_theme=147). For each age bin, we show the median survival for the centre age; so 40 for 35–45, adjusted for the sex distribution in the age bin of our study. Median survival for the ADC was calculated using Kaplan-Meier survival curves for each decade and per diagnostic group.

our cohort (figure 1B and online supplementary table 4). On visual inspection, the observed increase in survival time was comparable with the increase in the Dutch population. Furthermore, patients across all age categories have considerable shorter survival when compared with the general population. This is most striking in younger patients, but even visible in the oldest patients.

DISCUSSION

The main finding of this study is that after diagnosis in a memory clinic, median survival time is short with a median of 6 years. Among dementia types, little variation in median survival time was observed. Median survival time was shorter in patients with late-onset dementia, but also remarkably short in patients with young-onset dementia, especially when compared with the general Dutch population. Our cohort covered a time span of almost two decades in which period changes in management and diagnostic criteria, but also general better health, could have influenced survival. We indeed see an increase in median survival time over time, but this observation is restricted to the late-onset patients and comparable with the increase in life expectancy in the general Dutch population. By contrast, survival time in young-onset patients is similarly short.

A potential limitation of the current study is that our cohort is from a tertiary memory clinic, and so results may not accurately reflect survival time for dementia in general. However, our data provide an important extension of existing literature, which is mostly restricted to older patients with unspecified types of dementia. Among the strengths of our study is that we derived information on mortality from the Dutch Municipality registry, which is a reliable and up-to-date governmental owned registry, leading to complete and accurate data. All patients were selected from the same memory clinic where they underwent standardised diagnostic work-up, and received comparable treatment and help with disease management.

In conclusion, median survival in patients with dementia is short, 6 years. Comparison with the general Dutch population shows that every type of dementia infers a strongly increased risk of mortality. This provides evidence for the notion that neurodegenerative diseases causing dementia are lethal, especially in young-onset patients. Despite increased awareness, median survival of these younger patients has not changed between 2000 and 2014. The fear that increased awareness would lead to (too) early diagnosis with ensuing too many years lived with a diagnosed disease that can as yet not be cured seems ungrounded.

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PS revised the manuscript and interpreted data. WMvdF drafted the manuscript, analysed/interpreted data and supervised the project.

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