Diagnosis of Type 2 Diabetes at an Older Age

Effect on mortality in men and women

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OBJECTIVE — To compare the mortality of people who were diagnosed with type 2 diabetes over 65 years of age with that of nondiabetic individuals.

RESEARCH DESIGN AND METHODS — Using a population-based diabetes information system for an observational cohort study in Tayside, Scotland, people who were diagnosed with type 2 diabetes over the age of 65 years between 1993 and 2002 were identified. Nondiabetic comparators, matched for age and sex, were identified from the nondiabetic population. The two cohorts were followed up for mortality and cardiovascular mortality according to death certification records.

RESULTS — There were 3,594 people with type 2 diabetes (48% male) and 7,188 matched comparators identified in the study. Over a mean follow-up period of 4.6 ± 2.9 years for 3,594 people with type 2 diabetes and 7,188 comparators, 909 (25.3%) patients in the diabetic cohort and 1,651 (23.0%) in those without diabetes (adjusted relative risk 1.01 [0.93–1.10]) died. The adjusted relative risk for mortality in the diabetic cohort compared with the nondiabetic cohort was 1.06 (95% CI 0.94–1.19) for men and 1.29 (1.15–1.45) for women. Cardiovascular deaths accounted for 49.4% of the deaths in people with and 45.2% in those without diabetes (adjusted relative risk 1.01 [0.93–1.10]).

CONCLUSIONS — Men diagnosed with type 2 diabetes over the age of 65 years have no excess mortality compared with their nondiabetic counterparts, a finding that was not replicated for women.

Diabetes Care 27:2797–2799, 2004

Diabetes is known to reduce life expectancy in older people (1). However, older people with diabetes are a heterogeneous group, including newly diagnosed people and those whose diagnosis may have occurred up to 20 years previously (2–4). Some research suggests that the effect on mortality of a diagnosis of diabetes becomes progressively less as age at diagnosis increases (5). A group of older people whose diabetes was detected by screening had an increased risk of mortality (6), and even patients who were diagnosed with diabetes over the age of 80 years had a reduced life expectancy of ~1 year (7). However, two European studies found no difference in mortality between men diagnosed with diabetes over the age of 75 years and nondiabetic men (8,9). We compared all-cause and cardiovascular mortality in cohorts of people diagnosed with type 2 diabetes at an older age with that in nondiabetic individuals.

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Received for publication 7 June 2004 and accepted in revised form 31 August 2004.

A table elsewhere in this issue shows conventional and Systeme International (SI) units and conversion factors for many substances. © 2004 by the American Diabetes Association.
RESULTS — There were 3,594 people with type 2 diabetes (48% male) and 7,188 matched comparators identified in the study. Subject survival is presented separately for men and women in Fig. 1. Over a mean follow-up period of 4.6 ± 2.9 years, 909 (25.3%) patients in the diabetic cohort and 1,651 (23.0%) in the nondiabetic cohort died. For men, the relative risk for mortality in the diabetic cohort compared with the nondiabetic cohort, adjusted for deprivation, was 1.06 (95% CI 0.94–1.19). There were no differences when patients were stratified by age at diagnosis. For women, the adjusted relative risk for mortality in the diabetic cohort compared with the nondiabetic cohort was 1.29 (1.15–1.45). The risks for those diagnosed with diabetes at 65–74 years, 75–84 years, and >85 years were 1.47 (1.21–1.78), 1.15 (0.97–1.38), and 1.36 (1.06–1.73), respectively. Cardiovascular deaths accounted for 49.4% of the deaths in people with diabetes and 45.2% in those without (adjusted relative risk 1.01 [0.93–1.10]).

CONCLUSIONS — In this study, men diagnosed with type 2 diabetes after 65 years of age had no increased risk of mortality compared with nondiabetic men of the same age. This result contrasts sharply with the significant effect of diabetes on mortality in a population of older diabetic people that included newly diagnosed individuals and those with a longer duration of disease (5). Studies that have found small differences in mortality, even in men diagnosed at a later age, have not adjusted for the confounding effect of deprivation (possibly independently associated with diabetes prevalence [13] and mortality).

Our data came from a validated diabetes system and are known to be reliable (9). The mean follow-up of almost 5 years was similar to that of an Italian study (7). It may be that mortality of diabetic and nondiabetic men diverges in later years after diagnosis, although this did not occur for at least 7 years following diagnosis in our study. A weakness of the study was that we were unable to adjust for cardiovascular risk factors at baseline. However, we might expect a poorer profile in the diabetic cohort (14, 15), with adjustment resulting in even less of a difference between the two cohorts. The proportion of cardiovascular deaths was relatively low; however, we used “underlying cause of death” to determine whether a death had a cardiovascular cause, and this may underestimate cardiovascular mortality. We also acknowledge that there may be a degree of under-ascertainment of diabetes in the nondiabetic cohort.

Our result may be due to a survivor effect, with men with more severe diabetes having presented and died before the age of 65 years. However, this does not detract from the important clinical point: that the effects of diabetes (in this case, mortality) in those diagnosed at an older age clearly differs markedly from those diagnosed when younger.

In contrast to men, women diagnosed with type 2 diabetes at an older age had an increased risk of mortality compared with older nondiabetic women. This was evident 3 years after diagnosis, particularly for women aged 65–74 years. Diabetes may be a stronger risk factor for women compared with men (as our results suggest), although whether this can be accounted for by a higher prevalence of classic cardiovascular risk factors in diabetic women compared with diabetic men is still controversial (16). We were unable to adjust for cardiovascular risk.
factors, but our study suggests that the effects of diabetes may vary according to sex, even in older individuals.

This study therefore highlights the importance of recognizing the heterogeneity of the older diabetic population.

Acknowledgments — The authors thank members of the DARTS/MEMO Collaboration and members of the DARTS Steering Group for their support.

References