Alzheimer’s disease is associated with increased risk of haemorrhagic stroke

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QUESTION

Question: Are community-dwelling people with Alzheimer’s disease at increased risk of stroke, and is there a difference by type of stroke?

People: All 28 093 community-dwelling adults with Alzheimer’s disease living in Finland on 51 December 2005, who were each matched to a person without Alzheimer’s disease by age, sex and region of residence (total n=56 186; mean age 79.6 years; 67.8% were female; age range 42–101). People with strokes prior to 1 January 2006 or to their Alzheimer’s diagnosis were excluded along with their matched controls, as were pairs where the matched controls had been entitled to reimbursed Alzheimer’s medication before enrolment. This left 25 404 pairs of individuals for analysis. Individuals in the control group who developed Alzheimer’s during follow-up (1766 people) were included in the Alzheimer’s group from the date of diagnosis.


Risk factors: Diagnosis of Alzheimer’s disease was based on National Institute of Neurological and Communicative Disorders and Stroke-Alzheimer’s Disease and Related Disorders Association (NINCDS-ADRDA) and Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) criteria. People with Alzheimer’s disease were identified from national prescription and reimbursement registers that were linked to a statutory register (HILMO) containing information on the use of inpatient and outpatient healthcare services in Finland. Analyses were adjusted for cancer, diabetes and cardiovascular disease. Associations were investigated by: age at follow-up (<75, 75–79, 80–85 and ≥86 years); quartiles of approximate age at diagnosis (calculated from the diagnosis of Alzheimer’s disease or first reimbursement purchase of Alzheimer’s medication, depending on which occurred first).

Outcomes: The three main outcomes of interest were: incidence of all strokes due to haemorrhage or cerebral infarction (International Classification of Diseases (ICD)-10 classification I60–I64); incidence of ischaemic strokes (I63); incidence of haemorrhagic strokes (I60–I62). Strokes were identified from the HILMO statutory register.

METHODS

Design: Cohort study.

Follow-up period: 4 years.

MAIN RESULTS

There were 2947 incident strokes during follow-up. Of these 2414 (82%) were ischaemic strokes, 516 (17.5%) were haemorrhagic and 17 (0.6%) had unclear aetiology. Alzheimer’s disease was not associated with an increased overall risk of stroke (adjusted HR 1.02, 95% CI 0.94 to 1.10) or of ischaemic stroke (adjusted HR 0.95, 95% CI 0.86 to 1.01). However, Alzheimer’s disease was associated with an increased risk of haemorrhagic stroke (adjusted HR 1.34, 95% CI 1.12 to 1.61). In the analysis by age at follow-up, Alzheimer’s disease was associated with significantly higher overall risk of stroke in the youngest age group (≥75 years, HR 1.42, 95% CI 1.12 to 1.80), but not for people in older age groups (80–85 and ≥85 years) when compared to people without Alzheimer’s disease. In the analysis by age at diagnosis, compared to people without Alzheimer’s, the risk of strokes was highest among people who were the youngest (38.9–73.9 years) when they were diagnosed with Alzheimer’s (all stroke: adjusted HR 1.41, 95% CI 1.16 to 1.71; ischaemic stroke: adjusted HR 1.63, 95% CI 1.08 to 2.45; haemorrhagic stroke: adjusted HR 1.29, 95% CI 1.03 to 1.62).

CONCLUSIONS

People with Alzheimer’s disease are at increased risk of haemorrhagic stroke but not ischaemic stroke compared to people without disease. Compared to people without Alzheimer’s, the risk of any stroke appears higher among younger people with Alzheimer’s disease.

ABSTRACTED FROM:


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