

Raised blood pressure is a risk factor for vascular dementia but not Alzheimer's disease: a cohort of 2.6 million people over two decades

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Background: Dementia and high blood pressure (BP) are huge public health issues and it has been proposed that hypertension in middle age may lead to dementia in old age.

Objectives: To investigate the association between systolic BP (SBP) and risk of the major subtypes of dementia: Alzheimer's disease (AD) and vascular dementia.

Methods: A cohort derived from the United Kingdom Clinical Practice Research Datalink included people aged 40 years or older with a first SBP recording between 1992 and 2009. Follow-up was until the practice's last data collection date, patient death/transfer out of practice or first record of dementia. People with a prior record of dementia were excluded. Incidence rates and risk ratios (RRs) were calculated for each SBP category using Poisson regression adjusted for age at diagnosis and sex.

Results: Our cohort of 2,665,880 people in UK general practices with median baseline age 54 years and follow-up of 8.2 years. There were a total of 51,741 cases of AD and 14,441 cases of vascular dementia. Overall, SBP was inversely associated with vascular dementia and AD. However, the inverse associations attenuated with time after the index measurement. Excluding the first 10 years of follow-up to minimise reverse causation, age and sex-adjusted RRs per 10mmHg higher SBP for vascular dementia were: RR 1.12 (95% CI 1.06-1.18) for age <55 years; 1.03 (95% CI 1.02-1.04) for age 55-74 and 0.99 (95% CI 0.96-1.02) for age 75+. For AD, the risks were: 1.00 (95% CI 0.97-1.03) for age <55; 0.98 (95% CI 0.97-0.99) for age 55-74 and 0.97 (95% CI 0.96-0.99) for age 75+. The associations were similar when adjusted for possible confounders (antihypertensive agents, cardiovascular disease, chronic obstructive

pulmonary disease and smoking) or when restricted to patients without prior hypertensive drug use or history of vascular disease.

Conclusions: Raised BP is a risk factor for vascular dementia in people aged less than 75 years. BP showed no association with AD. These results contradict the hypothesis that hypertension in middle age increases the risk of AD in old age.

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