
Blood Pressure Patterns and Incident Dementia



High and low blood pressure have been shown to be associated with cognitive decline and dementia in several studies, suggesting that blood pressure may be a viable target for the primary and secondary prevention of dementia. There is sufficient evidence to prove that hypertension may be a risk factor for cognitive decline and dementia.

However, before making recommendations regarding blood pressure targets to lower the risk of dementia, it is important to first understand the evolving relationship between late-life blood pressure, past hypertension, and cognitive functioning. In this current study, the authors examine the association of midlife to late-life blood pressure patterns with incident dementia, mild cognitive impairment, and late-life cognitive change. The hypothesis of the study is that people with an extended duration of midlife hypertension, followed by low pressure later in life could be at a higher risk for dementia in their older age.

During the study, sitting diastolic and systolic blood pressure (SBP) levels were assessed at visits 1 to 5. For the purpose of this investigation, blood pressure was defined as the mean of the last 2 measurements. Hypertension was defined as SBP above 140 mm Hg or diastolic blood pressure (DBP) above 90 mm Hg. Hypotension was defined at visit 5 as SBP lower than 90 mm Hg or DBP lower than 60 mm Hg. Midlife hypertension was defined as meeting hypertension criteria for 2 consecutive visits between visits 1 and 4; those who did not meet this criterion were classified as midlife normotensive. Late-life normotension, hypertension, and hypotension were defined at visit 5.

Study participants were grouped into 5 categories based on their BP readings: midlife and late-life normotension; midlife normotension and late-life hypertension; midlife and late-life hypertension; midlife normotension and late-life hypotension; and midlife hypertension and late-life hypotension. Patients who were evaluated at visit 6 underwent a comprehensive neuropsychological examination and an informant interview in order to assess dementia. Dementia was diagnosed in patients who met 3 criteria: Functional Activities Questionnaire greater than 5 or Clinical Dementia Rating sum of boxes greater than 3; at least 2 cognitive domain scores greater than 1.5 standard deviations below the normative mean; and an overall decline from visit 5 on the study's cognitive battery of greater than 0.055 standard deviations per year.

Participants who were not diagnosed with dementia were examined for cognitive impairment at visit 6. This was defined as at least 1 cognitive domain score greater than 1.5 standard deviations below the cohort's normative mean, a Clinical Dementia Rating sum of boxes, a Functional Activities Questionnaire score of 5 or less, and an overall decline from visit 5 on the full cognitive battery of greater than 0.055 standard deviations per year. Participants were also assessed for memory, processing speed and executive function, and language.

As per the results of the study, 21% of the study participants met the mild cognitive impairment criteria at visit 5. 11% of participants progressed to dementia after visit 5. Patients in the midlife and late-life hypertension group had a significantly increased risk of subsequent dementia compared with patients who remained normotensive. Sustained hypertension in midlife was associated with dementia risk. Participants with midlife hypertension and late-life hypotension had a higher risk of mild cognitive impairment.

Overall, findings from this study suggest that sustained hypertension in midlife to late-life and a pattern of midlife hypertension and late-life hypotension is associated with an increased risk of dementia compared with midlife and late-life normal blood pressure.

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