Effects of systolic blood pressure and hypertension duration on dementia in patients with atrial fibrillation

Daehoon Kim
Pil-Sung Yang
Eunsun Jang
Hee Tae Yu
Tae-Hoon Kim
Jae-Sun Uhm
Jung-Hoon Sung
Hui-Nam Pak
Moon-Hyoung Lee
Gregory Lip
Boyoung Joung

Introduction: Atrial fibrillation (AF) is associated with increased risk of cognitive impairment and dementia, even with no overt stroke. Hypertension is a potentially modifiable risk factor for dementia. We investigated the effects of systolic blood pressure (SBP) and hypertension duration on dementia among AF patients.

Methods: This cohort study based on data from the Korean National Health Insurance Service enrolled participants with incident AF, aged ≥50 years, receiving antihypertensive treatment, and not previously diagnosed with dementia from 2005 to 2016 (n=196,379). They were followed from AF diagnosis until dementia, death, or December 31, 2016. Primary exposure variables were SBP and hypertension duration, measured at baseline and updated over time. The primary outcome was incident dementia.

Result: During 974,600 years of follow-up, there were 37,485 new dementia diagnoses. In mid-life patients (<70 years), high SBP (≥140 mmHg) was associated with increased dementia risk (hazard ratio [HR] 1.13, 95% confidence interval [CI] 1.09–1.17). Among these mid-life patients with high baseline SBP, follow-up SBP control to 120–129 mmHg was associated with decreased dementia risk (HR 0.85, 95% CI 0.74–0.98). In later-life patients (≥70 years), no significant associations of high SBP with dementia were observed. Instead, low SBP (<120 mmHg) in age 70–79 years correlated with increased dementia risk (HR 1.04, 95% CI 1.00–1.08). Longer hypertension duration increased dementia risk in all ages, with stronger associations in older patients. The effects of SBP and hypertension duration were considerably different according to dementia subtypes (Alzheimer's disease or vascular dementia). Time-updated regression models revealed lowest dementia risks with SBP 120–129 mmHg in patients aged <70 years and 130–139 mmHg in those aged 70–79 years.

Conclusion: In midlife AF patients, reducing SBP to 120–129 mmHg might lower their subsequent dementia risk. The optimal SBP range for preventing dementia differs according to age.