Blood Pressure in Very Old Age
Determinants, Adverse Outcomes, and Heterogeneity

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Abstract

High blood pressure (BP) is the leading risk factor for disease and mortality in the world and is highly prevalent in the very old population. However, risks associated with high BP in very old age (≥80 or ≥85 years) are not entirely understood, as the majority of scientific studies have been performed with younger populations and much of the existing scientific knowledge concerning very old individuals is contradictory. With the expected growth of the very old population, future healthcare systems need to be prepared to manage age-related diseases in an effective and safe manner.

This thesis investigated determinants of systolic BP change, associations of BP with mortality and stroke risks, and differences in these associations with respect to indicators of health status.

The studies were based on data from the population-based Umeå 85+/Gerontological Regional Database study, which provided cross-sectional and longitudinal information about socioeconomic factors, medical conditions, drug prescriptions, and health-related assessments from 2000 to 2015. Participants were aged 85, 90, and ≥95 years and lived in Västerbotten, Sweden, and Österbotten/Pohjanmaa, Finland. Follow-up assessments were conducted after 5 years.

Average annual systolic BP decline was 2.6 ± 5.4 mm Hg among participants followed for 5 years. BP was found to decline in very old age. Systolic BP declined with higher baseline systolic BP, later investigation year, baseline antidepressant use, incident acute myocardial infarction, new diuretic treatment, and increasing dependency in activities of daily living.

Within 5 years, 61% of participants had died and 10% had had an incident stroke. Low BP was a risk marker for short life expectancy due to morbidity in the total sample and among participants with gait speeds < .5 m/s. High BP was an independent risk factor for mortality among participants with gait speeds ≥ .5 m/s.

High and low systolic BP were associated independently with increased mortality risk among participants with very severe cognitive impairment, as defined by Mini-Mental State Examination scores of 0–10, compared with intermediary BP. No independent association between BP and mortality risk was found in subcohorts with higher scores.

High BP seemed to increase stroke risk in very old age, independent of other factors. The association between BP and stroke risk did not differ according to cognitive performance or dependency in activities of daily living.

These findings may contribute to a better understanding of the risks of adverse outcomes associated with different levels of BP in very old age, the importance of comorbidity for these risks, and the etiology of systolic BP change.

Keywords

Blood pressure, aged 80 and over, hypertension, hypotension, mortality, stroke, gait speed, cognition disorders, dementia, cohort study.