

The Force of Blood

Epidemiological studies of blood pressure in stroke, atrial fibrillation and primary care

AKADEMISK AVHANDLING

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i hörsal Arvid Carlsson, Medicinaregatan 3, den 4 juni 2021, klockan 09:00

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Avhandlingen baseras på följande delarbeten

- I. Bager J-E, Hjalmarsson C, Manhem K, Andersson B. Acute blood pressure levels and long-term outcome in ischemic stroke.
Brain and Behavior. 2018;8(6):e00992.
- II. Bager J-E, Hjerpe P, Manhem K, Björck S, Franzén S, Rosengren A, Adamsson Eryd S. Treatment of hypertension in old patients without previous cardiovascular disease.
J Hypertens. 2019;37(11):2269-2279.
- III. Bager J-E, Hjerpe P, Schiöler L, Bengtsson Boström K, Kahan T, Ödesjö H, Jood K, Hasselström J, Ljungman C, Manhem K, Mourtzinis G. Blood pressure levels and risk of haemorrhagic stroke in patients with atrial fibrillation and oral anticoagulants: results from The Swedish Primary Care Cardiovascular Database of Skaraborg.
J Hypertens. Electronically published ahead of print.
- IV. Bager J-E, Mourtzinis G, Andersson T, Nätman J, Rosengren A, Björck S, Manhem K, Hjerpe P. Trends in blood pressure, blood lipids and smoking from 259 753 patients with hypertension in a Swedish primary care register: Results from QregPV
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**SAHLGRENKA AKADEMIN
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ABSTRACT

Aim: The overarching aim of this thesis was to investigate the prevalence, temporal trends and associations to cardiovascular outcomes of blood pressure levels in patients in Västra Götaland. **Methods and findings:** In Study I, Cox regression analysis was used to investigate associations between blood pressure and mortality in 799 patients with acute ischemic stroke who were identified in the quality register of a stroke ward at Sahlgrenska University Hospital. Early change in blood pressure (BP) was found to be a significant predictor of mortality in patients with acute ischemic stroke. In Study II, 31 704 patients with hypertension, but without cancer, diabetes or manifest cardiovascular disease, were included from the primary care register QregPV. 5 041 were above age 75. The Kaplan-Meier estimator and Cox regression analysis were used to study the incidence and risk of stroke or myocardial infarction (MI) at different systolic blood pressure (SBP) levels. Older patients with SBP in the 110 – 129 mmHg range had a lower risk of stroke or MI, compared to those with SBP 130 – 139 mmHg. In Study III, the risk of haemorrhagic stroke at different baseline SBP levels was analyzed with Cox regression in 3 972 patients with hypertension, atrial fibrillation (AF) and newly initiated oral anticoagulants (OAC), who were identified in the Swedish Primary Care Cardiovascular Database of Skaraborg. Baseline SBP in the 145 – 180 mmHg range, prior to initiation of OAC, was associated with a more than doubled risk of haemorrhagic stroke, as compared to an SBP of 130 mmHg. This suggests that lowering SBP to below 145 mmHg, prior to initiation of OAC, decreases the risk of haemorrhagic stroke in patients with hypertension and AF. Study IV comprised 259 753 patients with hypertension, but without diabetes mellitus or ischemic heart disease. The study described longitudinal trends of SBP and low-density lipoprotein cholesterol (LDL-C); and risk-factor control from 2010 to 2017 in three important, modifiable risk factors: BP<140/90 mmHg, LDL-C <2.6 mmol/L and smoking status. Mean SBP decreased from 140.5 to 137.1 mmHg and BP control improved from 2010 to 2017. Smoking frequency decreased from 15.7% to 12.3 %, but mean LDL-C and LDL-C control changed little. In 2017, 90.0% of patients with hypertension were still exposed to at least one uncontrolled, modifiable risk factor for cardiovascular disease.

Keywords: epidemiology, blood pressure, hypertension, stroke, myocardial infarction, atrial fibrillation, anticoagulants, LDL cholesterol, primary health care