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The impact of the blood pressure classification on the cardiovascular events among the individuals without any antihypertensive medication; A nationwide population-based cohort study

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Objectives: The 2017 American College of Cardiology/American Heart Association (ACC/AHA) hypertension guideline newly defined hypertension and lowered threshold to 130/80 mmHg. However, it is still in debate whether more aggressive diagnosis and treatment of hypertension according to the guideline can be applied to Korean population. Therefore, we investigated the impact of new hypertension classification on cardiovascular events (CVE) in Korean population without any antihypertensive medication.

Methods: This retrospective longitudinal study was conducted with 352,482 subjects enrolled in the Korean National Health Service-National Health Screening Cohort between 2002 and 2003. Subjects were categorized according to 2017 ACC/AHA hypertension guideline based on their mean blood pressure (BP) during follow-up period, and the primary outcome of the study was newly developed CVE (cardiovascular disease and mortality).

Results: During the median follow-up of 10 years, overall 26.89 events per 1,000 person-years (95% confidence interval [CI], 26.87-26.91) occurred. Compared to normal (BP<120/80 mmHg), significantly increased risk of CVE was observed from the stage 1 hypertension (systolic BP 130-139/diastolic BP 80-89 mmHg) (hazard ratio [HR], 1.31; 95% CI, 1.24 - 1.39; P < 0.001), but not in the elevated stage (systolic BP 120-129/diastolic BP < 80 mmHg). This relationship was shown in both men and women. When subjects were categorized into age, subjects aged 40s had increased risk of CVE from the elevated group (HR, 1.17; 95% CI, 1.04 - 1.33; P = 0.01). This relationship was prominent in women aged 40s. Meanwhile, subjects aged 70s or over had increased risk of CVE from stage 2 hypertension (BP>140/90 mmHg), but opposite lower risk was shown in the elevated group (HR, 0.82; 95% CI, 0.68 - 0.98; P = 0.03).

Conclusions: Hypertensive patients defined by 2017 ACC/AHA guideline had increased risk of CVE in Korean population without any antihypertensive medication. However, treatment plan should be individualized according to patients' characteristics.