Effect of lowering hypertension threshold in CHA2DS2-VASc score system on stroke risk stratification

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Introduction: The 2017 American College of Cardiology/American Heart Association (ACC/AHA) Guideline for High Blood Pressure in Adults redefined hypertension as systolic blood pressure (BP) \( \geq 130 \) mmHg or diastolic BP \( \geq 80 \) mmHg. A recent population-based study reports that atrial fibrillation (AF) patients with hypertension (HTN), defined by the 2017 ACC/AHA criteria, have worse cardiovascular outcomes including ischemic stroke. This study hypothesized that using the lowered HTN threshold in CHA2DS2-VASc system would be able to further refine stroke risk stratification.

Methods: This population-based cohort study from the national health insurance service database consisted of 337,228 oral anticoagulant (OAC)-naïve, nonvalvular AF adults with BP measurements within 1 year before AF diagnosis in 2005-2016. Starting from AF diagnosis, participants were followed up until the date of ischemic stroke, initiation of OAC, death, or December 31, 2016. Original (HTN as \( \geq 140/90 \)) and redefined (\( \geq 130/90 \)) CHA2DS2-VASc score is calculated in each participant.

Result: During a total of 1,424,436 person-years of follow-up, there were 36,709 ischemic stroke events. Applying the lowered HTN definition up-reclassified 51,313 (15.2%) patients. In male, up-reclassified patients had significantly higher risk of ischemic stroke, compared with remained patients [Patients with original CHA2DS2-VASc of 0: 0.95 in remained vs 1.03 per 100 person-years in up-reclassified, adjusted hazard ratio (AHR) 1.13, 95% confidence interval (CI) 1.01-1.27] [Patients with original CHA2DS2-VASc of 1: 1.52 in remained vs 2.42 in up-reclassified per 100 person-years, AHR (95% CI) of 1.96 (1.77-2.18) vs 3.07 (2.70-3.48) being those with original and redefined 0 as reference]. Similar patterns were observed in female, when CHA2DS2-VASc increasing from 1 to 2 or from 2 to 3.

Conclusion: Patients with AF having up-reclassified CHA2DS2-VASc score by applying the 2017 ACC/AHA HTN criteria were associated with increased risk of ischemic stroke, especially in those with non-gender risk factor increasing 1 -> 2. Such reclassification might distinguish new OAC-indicated patients with high stroke risk.