Effect of hypertension and systolic blood pressure on cardiovascular and limb outcomes in patients with symptomatic peripheral artery disease: the EUCLID trial

Authors:
W Hiatt¹, CW Hopley², S Kavanagh³, MR Patel⁴, I Baumgartner⁵, JS Berger⁶, JI Blomster⁷, FGR Fowkes⁸, WS Jones⁴, BG Katona⁹, KW Mahaffey¹⁰, L Norgren¹¹, CPC Clinical Research, University of Colorado School of Medicine - Aurora - United States of America, Geisel School of Medicine, Dartmouth College, Department of Medicine, Section of Nephrology and Hypertension - Hanover - United States of America, CPC Clinical Research - Aurora - United States of America, Duke Clinical Research Institute, Duke University School of Medicine - Durham - United States of America, Swiss Cardiovascular Center, University of Bern - Bern - Switzerland, New York University School of Medicine, Departments of Medicine and Surgery - New York - United States of America, University of Turk - Turku - Finland, University of Edinburgh, Usher Institute of Population Health Sciences and Informatics - Edinburgh - United Kingdom of Great Britain & Northern Ireland, AstraZeneca Gaithersburg - Gaithersburg - United States of America,  Stanford Center for Clinical Research, Stanford University School of Medicine - Stanford - United States of America, Orebro University, Faculty of Medicine and Health - Orebro - Sweden,

On behalf: EUCLID Executive Committee and Investigators

Topic(s):
Peripheral Artery Disease

Citation:
Background—Hypertension is a risk factor for major adverse cardiac events (MACE) in patients with symptomatic peripheral artery disease (PAD).

Purpose—The effects of a history of hypertension and baseline systolic blood pressure (SBP) on MACE and major adverse limb events (MALE), including acute limb ischemia and major amputation, were evaluated in the Examining Use of tiCagreLor In paD (EUCLID) trial.

Methods—EUCLID randomized 13,885 patients with PAD and found no benefit of ticagrelor compared with clopidogrel on risk of MACE or MALE. The median duration of follow up was approximately 30 months. This post hoc, subgroup analysis evaluated the effects of hypertension history at baseline on the hazard for MACE and MALE. An adjusted restricted cubic spline regression analysis evaluated the association of SBP with MACE and MALE.

Results—A clinical history of hypertension was present in 10,857 (78%) patients at baseline and these patients were more likely to be older, female, white or African American, and reside in North America compared with the 3026 without hypertension. Hypertension was associated with a higher prevalence of concomitant cardiovascular diseases, polyvascular disease, diabetes, and prior coronary interventions. MACE occurred at a rate of 4.63 events/100 pt-yrs in participants with hypertension and 3.64 events/100 pt-yrs in participants without hypertension, (adjusted hazard ratio [aHR] 0.94, 95% CI 0.82–1.08; p=0.38). MALE occurred at a rate of 1.11 events/100 pt-yrs in those with hypertension and 1.38 events/100 pt-yrs in those without hypertension (p=0.054) (aHR 0.93 (95% CI 0.73, 1.18) p=0.55. The adjusted spline model for MACE and SBP demonstrated a significantly non-linear relationship with a HR 1.08 (95% CI 1.01, 1.15), p=0.0275 for every 10-unit decrease < 135 mmHg SBP and HR 1.11 (1.06, 1.16), p<0.0001 for every 10-unit increase >135 mmHg (figure). There was no association between baseline SBP and MALE events.
Conclusions—A history of hypertension was not associated with a higher adjusted hazard for MACE or MALE in participants with PAD. In contrast, SBP at baseline was associated with increased risk of MACE at values both above and below 135 mmHg.