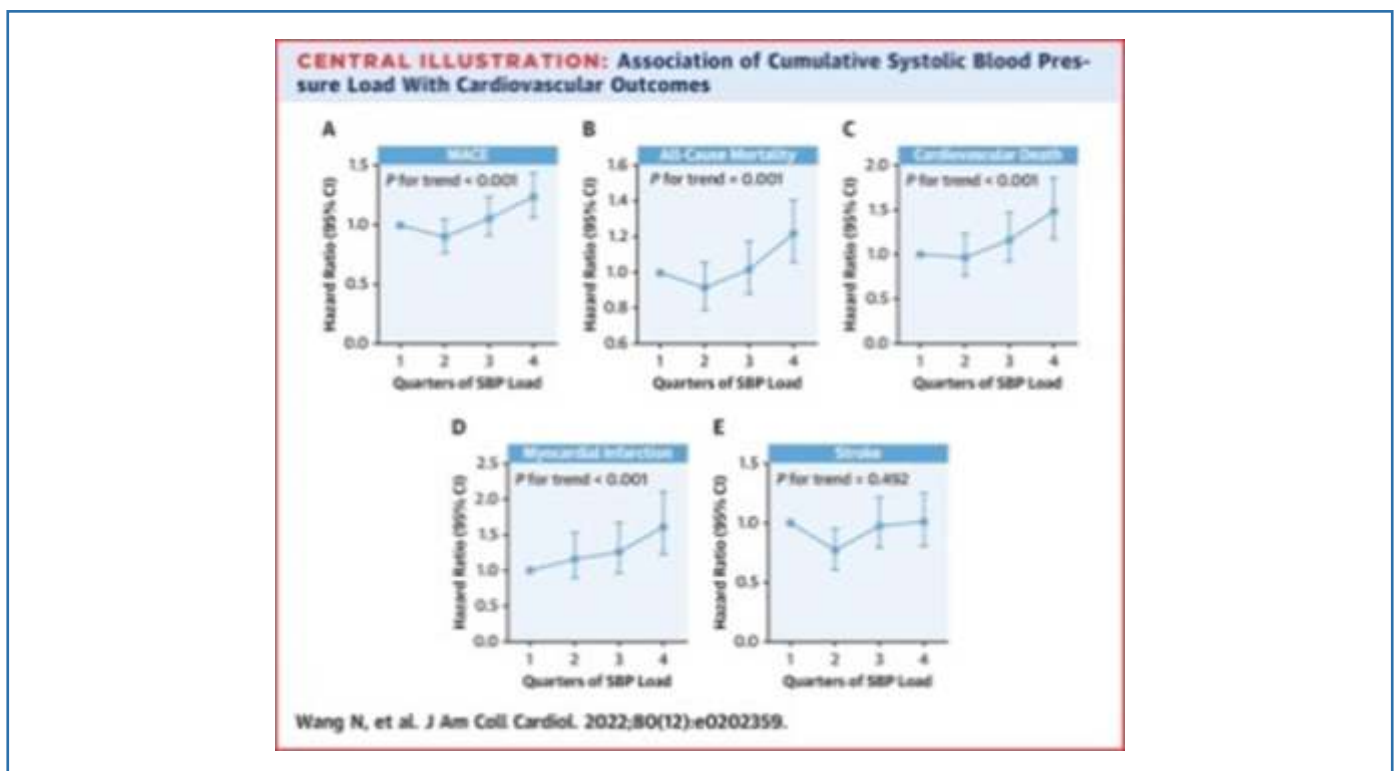


In Diabetes

Cumulative Systolic Blood Pressure Load and Cardiovascular Risk in Patients with Diabetes

Original Investigation *J Am Coll Cardiol.* 2022 Sep, 80 (12) 1147–1155



Abstract

Background

Standard measures of blood pressure (BP) do not account for both the magnitude and duration of exposure to elevated BP over time.

Objectives

The purpose of this study was to assess the association between cumulative systolic blood pressure (SBP) load and risk of cardiovascular events in patients with type 2 diabetes.

Methods

A post hoc analysis of patients with type 2 diabetes followed by the ADVANCE-ON (Action in Diabetes and Vascular Disease: Preterax and Diamicron Modified Release Controlled Evaluation - Observational Study). Cumulative SBP load was defined as the area under curve for SBP values ≥ 130 mm Hg divided by the area under curve for all measured SBP values over a 24-month exposure period. HRs for the association between cumulative SBP load with major cardiovascular events and death were estimated using Cox models.



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Results

Over a median 7.6 years of follow-up, 1,469 major cardiovascular events, 1,615 deaths, and 660 cardiovascular deaths were observed in 9,338 participants. Each 1-SD increase in cumulative SBP load was associated with a 14% increase in major cardiovascular events (HR: 1.14; 95% CI: 1.09-1.20), 13% increase in all-cause mortality (HR: 1.13; 95% CI: 1.13-1.18), and 21% increase in cardiovascular death (HR: 1.21; 95% CI: 1.13-1.29). For the prediction of cardiovascular events and death, cumulative SBP load outperformed mean SBP, time-below-target SBP, and visit-to-visit SBP variability in terms of Akaike information criterion and net reclassification indexes.

Conclusions

Cumulative SBP load may provide better prediction of major cardiovascular events compared with traditional BP measures among patients with type 2 diabetes. These findings reinforce the importance of both the magnitude and duration of exposure to elevated SBP in assessing cardiovascular risk. (Action in Diabetes and Vascular Disease Preterax and Diamicron MR Controlled Evaluation Post Trial Observational Study [ADVANCE-ON]; NCT00949286)

Dr. V. Balachandran
MD, MNAMS, FRCP, FACC