DIFFERENTIAL IMPACTS OF HYPERTENSION AND TYPE 2 DIABETES MELLITUS ON ARTERIAL DISEASE AND CARDIOVASCULAR OUTCOMES: THE STRONG HEART STUDY

ACC Moderated Poster Contributions
McCormick Place South, Hall A
Sunday, March 25, 2012, 9:30 a.m.-10:30 a.m.

Session Title: Risks and Risk Factors in Hypertension
Abstract Category: 7. Prevention: Hypertension
Presentation Number: 1178-23

Authors: Mary J. Roman, Richard Devereux, Jorge Kizer, Elisa T. Lee, Lyle G. Best, Barbara V. Howard, Weill Cornell Medical College, New York, NY, USA, Medstar Health Research Institute, Washington, DC, USA

Background: Both hypertension and diabetes mellitus (DM) increase risk for subclinical and clinical cardiovascular disease (CVD). Furthermore, hypertension is common among individuals with type 2 DM. The relative extents to which hypertension and DM induce subclinical CVD have not been systematically examined. Data regarding the extent to which coexistent hypertension increases clinical CVD risk in DM are conflicting.

Methods: We examined subclinical arterial disease (carotid artery hypertrophy and atherosclerosis) and incident CVD in a population-based cohort with high rates of DM and CVD. 2887 participants were divided into 4 groups: normal (n=799), hypertension alone (n=647), DM alone (n=494), and both hypertension and DM (n=947). Average blood pressure was 120/71 mmHg in normotensive participants and 140/76 mmHg in hypertensive participants.

Results: In multivariable models adjusting for other CVD risk factors and creatinine, arterial hypertrophy and atherosclerosis were significantly greater in the two DM groups and not increased by coexistent hypertension. Although hypertension significantly influenced arterial hypertrophy compared to normal, differences were eliminated by consideration of systolic pressure, whereas the presence and extent of atherosclerosis among hypertensives was independent of distending pressure. Among 2441 participants without CVD at baseline, events occurred in 10.1% of normals, 17.8% with hypertension alone, 25.5% with DM alone, and 29.3% with both. Rates were significantly higher in the 2 DM groups and not increased by coexistent hypertension. Adjusted hazards ratios were 1.69 (p=0.001) for hypertension alone, 3.16 (p<0.001) for DM alone, and 3.85 (p<0.001) for both (p<0.001 for trend).

Conclusions: Both hypertension and DM cause increased subclinical and clinical CVD. The impact of hypertension on arterial hypertrophy, but not atherosclerosis, is largely attributable to increased distending pressure. Higher rates of vascular hypertrophy, subclinical atherosclerosis, and incident CVD in DM are not attributable to coexistent hypertension in this population with acceptable blood pressure control.