LONGITUDINAL EFFECTS OF A DECADE OF AGING ON CAROTID ARTERY STIFFNESS: THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS (MESA)

Poster Contributions
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Background: Carotid artery stiffening is associated with increased risk of cardiac disease and cerebral dysfunction, however the effects of aging and cardiovascular disease (CVD) risk factors on carotid artery stiffening have not been assessed in a large, multi-ethnic, prospective, longitudinal study.

Methods: Young's elastic modulus (YEM) and distensibility coefficient (DC) were measured by ultrasound of the common carotid artery at baseline and after a mean (standard deviation) of 9.4 (0.5) years in 2,729 MESA participants. Effects of age and CVD risk factors were evaluated by multivariable mixed regression models.

Results: At baseline, subjects were 60.5 (9.4) years old (53% female; 26% African-American, 21% Hispanic, 14% Chinese). YEM increased from 1,583 (929) to 1,757 (1,328) mmHg/cm (p<0.001), indicating progressive arterial stiffening and was independently associated with age, male sex, Chinese ethnicity, impaired fasting glucose, cigarette smoking and higher systolic blood pressure (all p<0.02). Similar associations were seen with DC. Change in YEM was independently associated with age and was significantly worse among those in the highest quartile of age (68-84 years old, p<0.0001) and was especially prominent in those >75 years old at baseline (p<0.0001, figure).

Conclusion: Arterial stiffening accelerates with advanced age. Older individuals experience greater increases in YEM than do younger adults, even after considering the effects of traditional risk factors.