

SSA15-01

Scientific Papers

Subclinical Atherosclerosis and Cognitive Impairment: The XXXXX Heart Study

Sunday, 10:45- 10:55 AM

Location: N229

PARTICIPANTS:

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PURPOSE

Limited studies have explored the relationship between atherosclerosis and cognitive impairment. We sought to determine associations between subclinical atherosclerosis, cognitive screening, and white matter hyperintensities on MRI, a predictor of cognitive function.

METHOD AND MATERIALS

The study consisted of 1903 participants from the XXXXXX Heart Study (mean age 44 ± 10 years, 56% female) without cardiovascular disease who underwent carotid and brain MRI at 3 Tesla. Semi-automated techniques were used to define wall contours of the internal and common carotid arteries (ICA and CCA) and white matter hyperintensity volume (WMH). Subjects also underwent Montreal Cognitive Assessment (MaCA) testing and muHidetector CT for measurement of coronary artery calcium (CAC) using the Agatston method. A MaCA score less than 26 was used to indicate the presence of at least mild cognitive impairment. Large WMH was defined as greater than 1 SO above the age-specific median. We related CAC and carotid wall areas to WMH and MoCA scores using Spearman correlation and multivariable linear and logistic regression models after adjusting for traditional risk factors, including age, ethnicity, male sex, diabetes mellitus, hypertension, smoking, and body mass index.

RESULTS

ICA and CCA wall areas correlated with WMH and MaCA score (all $p < .001$) in unadjusted models. After adjusting for traditional risk factors, ICA wall area remained associated with MaCA ($\beta = -0.02$, $p < .05$), and CCA wall area remained associated with WMH ($\beta = 0.002$, $p = 0.04$). Increasing ICA wall area predicted MaCA score < 26 (OR 1.12 per SO change, 95% CI 0.99-1.26, $p = 0.04$) after multivariable adjustment, but increasing CCA wall area did not predict MoCA score < 26 ($p = 0.5$). After adjusting for traditional risk factors, CAC was associated with WMH ($\beta = 0.013$, $p = 0.0008$). Increasing CAC score predicted large WMH (OR 1.19 per SO

change, 95% CI 1.03-1.38, p=0.02).

CONCLUSION

Subclinical coronary and carotid atherosclerosis are predictors of poorer cognitive function as measured by MoCA score and white matter hyperintensity volume on MRI.

CLINICAL RELEVANCE/APPLICATION

Subclinical atherosclerosis may predict cognitive decline independent of traditional cardiovascular risk factors. Different sites and measures of atherosclerosis may have different sensitivities for predicting cognitive dysfunction..