SST09-01

Subclinical Cardiac Dysfunction Relates to Imaging Markers of Subclinical Brain Disease in the General Population

Friday 10:30-10:40 AM | SST09-01 | NA

PURPOSE

To investigate the association between NT-proBNP, a marker of heart disease, and imaging markers of subclinical brain disease on magnetic resonance imaging (MRI) in community-dwelling persons who are free of stroke, dementia, and a clinical diagnosis of cardiovascular disease.

METHOD AND MATERIALS

In 2,475 persons (mean age 56.6 years; 57.3% women) from a prospective population-based study we measured NT-proBNP in serum. All persons underwent brain MRI on a 1.5-tesla MRI system, yielding imaging markers for global brain structure, focal abnormalities (lacunes, white matter lesions, cerebral microbleeds), and microstructural white matter integrity. We used multivariable linear and logistic regression models to investigate the association between NT-proBNP (continuous levels and per tertile) and markers of subclinical brain disease.

RESULTS

Higher NT-proBNP was associated with smaller total brain volume (mean difference per SD increase in NT-proBNP: -0.023, 95% confidence interval [CI] -0.036;-0.009, p=0.001), predominantly driven by grey matter volume (mean difference per SD increase in NT-proBNP: -0.037, 95%CI -0.057;-0.017, $p<0.001$), and less by white matter volume. Higher NT-proBNP was associated with larger white matter lesion volume (mean difference per SD increase in NT-proBNP: 0.099, 95%CI 0.060; 0.137, $p<0.0001$), and with lower fractional anisotropy and higher mean diffusivity in white matter.

CONCLUSION

In community-dwelling persons, subclinical cardiac dysfunction as reflected by serum NT-proBNP levels, is associated with global and microstructural imaging markers of subclinical brain disease.

CLINICAL RELEVANCE/APPLICATION

Our data provide more insight into the heart-brain connection, which is essential since both cardiac dysfunction and subclinical brain disease are growing problems in an aging population.