

Abstracts



Cardiovascular Risk Factors and Cognitive Performance: A Diffusion Tensor Imaging Study

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Body

1603-P - Cardiovascular Risk Factors and Cognitive Performance: A Diffusion Tensor Imaging Study
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Cardiovascular risk factors (diabetes mellitus type 2 (T2DM), hypertension, hyperlipidemia) are associated with worse cognitive performance in older adults. We aimed to determine the impact of cardiovascular risk factors on brain white matter microstructure and cognitive performance. 33 subjects with cardiovascular risk factors (age 65.3 ± 8.3 , 57.8% female, 28 T2DM (duration 14.6 ± 8.5 years), 33 hypertensive, 28 hyperlipidemic and 23 age and education-matched nondiabetic normotensive controls completed a battery of cognitive tests (Hopkins Verbal Learning test (HVLT), Verbal Fluency test (VF)). All patients received 3T MRI diffusion tensor imaging. Brain global and regional volumes, white matter fractional anisotropy (FA), mean diffusivity (MD), radial diffusivity (RD) and axial diffusivity (AD) were calculated. Multiple regression analyses were performed adjusting for age, and for the presence of hypertension, hyperlipidemia and diabetes. Global and regional white and gray matter brain volumes were not different between the groups. The risk factor group had worse performance in verbal fluency, learning and memory, compared to controls (VF: t-score ($p=0.03$), VF: #animals t-score ($p=0.0001$), HVLT: Total recall t-score ($p=0.0001$), and HVLT: Delayed recall t-score ($p=0.003$)). We found a positive association between VF: #animals t-score and R angular gyrus FA ($p=0.0003$, $\text{radj } 0.4$), and a negative association with MD ($p=0.003$, $\text{radj } 0.3$), L1 ($p=0.01$, $\text{radj } 0.3$, and RD ($p=0.0001$, $\text{radj } 0.5$), independent of age, hyperlipidemia, hypertension diagnosis and HbA1c. The cardiovascular risk factor group had worse performance in verbal fluency, learning and memory. Semantic verbal fluency showed the strongest correlation with R angular gyrus diffusion tensor imaging metrics. Cardiovascular risk factors exert a long-term effect on brain structure manifesting as microstructural white matter abnormalities.