CEREBAL AND SISTEMIC ENDOTHELIAL FUNCTIOS IN LEUKOARIOSIS

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Background: Clinical relevance of leukoaraiosis (LA), its pathophysiology is still uncler. In the present work, we are focused on answering the question whether LA patients have cerebral and/or systemic endothelial dysfunction and whether this is solely a consequence of vascular risk factors (VRF).

Subjects and Methods: Thirty patients with LA (58 ± 7 years) and 30 sex- and age-matched controls without LA (55 ± 6 years) were recruited with identical VRF. The cerebral endothelial function was determined by cerebrovascular reactivity to L-arginine (CVR) using TCD measurements of mean arterial velocity in both middle cerebral arteries before and after intravenous L-arginine infusion. The systemic endothelial function was determined by flow-mediated dilatation (FMD). All participants underwent a brain magnetic resonance imaging to search for radiological signs of LA that was classified according to the Fazekas score.

Results: We found a significant decrease in both CVR (9.6 ± 3.2% vs. 15.8 ± 6.1%, p0.001) and FMD (4.8 ± 3.1% vs. 7.4 ± 3.8%, p=0.004) in patients with LA compared to controls. Both CVR (7.4 ± 3.1% vs. 12.2 ± 2.6%, p=0.001) and FMD (3.0 ± 2.2% vs. 6.4 ± 3.1%, p=0.011) were significantly decreased in LA subgroup Fazekas 3 compared to the subgroup Fazekas 1. The CVR and FMD significantly positively correlated in patients with LA (b=0.192, 95% CI=0.031-0.354, p=0.02).

Conclusions: The results suggest that patients with LA have a significant impairment of both cerebral and systemic endothelial function, that is larger than could be expected, based on present VRF.