Microvascular changes and LDL cholesterol levels in Huntington`s disease

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Huntington`s disease (HD) is a devastating genetic condition in which due to expanded number of glutamines, a mutant form of protein huntingtin is produced. Mutant protein might affect neuronal function in many ways presumably mostly through interfering with mitochondrial function. Recent MRI/fMRI research however revealed diminished regional CBF implying cortical microvascular changes in early HD that might be partly independent from cortical brain atrophy.

In our recent study we searched for peripheral microvascular changes in presymptomatic (PHD) and early HD (EHD). Simple mental arithmetic and local cooling at 15°C tests were performed to test peripheral microvascular reactivity measuring laser Doppler flux.

In our group of PHD individuals a normal response to mental stress and increased response to local cooling (p0.05) compared to healthy controls was observed. In contrast, in EHD mental stress response was diminished (p0.05) and local cooling response was comparable to that in healthy controls. In both groups mental stress response correlated to the results of symbol digit modalities test (SDMT). In addition, local cooling response in PHD/EHD individuals suggesting the hypothalamic disinhibition correlated to the levels of LDL, a major risk factor for cerebral vascular disease and systemic cardiovascular disease (R=0.573, p=0.016).

In conclusion, peripheral microvascular changes correlating to SDMT decline might reflect central microvascular changes suggesting that these changes might contribute to the development of central and peripheral pathology in HD. The correlation between local cooling response and LDL levels might suggest the effect of activated central sympathetic system on systemic microcirculation in HD.

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