

White Matter Ischemia or Endogenic, Senile Neurodegenerative Process?

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Letter to the Editor

An intellectual problem arises for clinicians, who want to acquaint with results of interdisciplinary research presented by Santiago et al. [1]. It is a challenge how to integrate the nature of three considered syndromes and draw practical conclusions.

Knowledge of the pathogenesis of coronary artery disease enables associate it with one of possible interrelationships of CAD with the cognitive impairment in the elderly. The chain of atherosclerotic transformations can be the same both in coronary and cerebral vessels. These changes begin from increased endothelial permeability, leucocytes migration into the arterial walls, adherence and aggregation of platelets and lipid infiltration.

Important is however the question about the most primary cause of the damage to the endothelium. There are links between the state of the vascular endothelium and lifestyle, however in the light of some recent papers the primary causes of the endothelial damage should be traced, as originally suggested, already in the seventies of last century - in such factors as raised anger, hostility, aggression, impulsivity and depression [2].

Serrano et al. emphasis that these mental traits and behavioral factors stimulate hypothalamic-pituitary adrenal axis Gutstein is convinced that these factors cause also imbalance of autonomic nervous system and vessel spasms leading to increased endothelial permeability it is known that spasms may concern also cerebral vessels [3].

Damaged coronary arteries cause insufficient blood flow and oxygenation of myocardium. Similar changes of brain vessels can cause an insufficient blood supply to the brain neural tissue. We should however take into account that there are many patients with CAD, who have not simultaneous changes in carotid artery and brain vessels.

The question also arise what else, besides of the simultaneous atherosclerotic process leads to early cognitive impairment in older people with CAD [4]. It seems that trying to answer to this question, first of all, we should consider the known risk factors of cognitive impairment and dementia.

Deckers et al. enumerate among them depression, hypertension, diabetes, obesity, hyperlipidemia, physical inactivity, and smoking.

Many authors track also risk factors among adverse events in childhood, long cumulative exposure to stress, long negative emotions, and many different social factors [5].

Some of the different risk factors and endogenous, senile neurodegenerative process can induce impairment of mental capacity that is not caused by vascular changes.

The question emerges whether the sophisticated diagnostic technique DTI (Diffusion tensor imaging) used by authors can help in clinical practice? The clinicians would like to know whether the examinations of white matter microstructural integrity help to:

(1) discern vascular or rather neurodegenerative causes of cognitive impairment, (2) discern the natural age-specific changes in cognitive performance from early onset of the mild cognitive impairment, (3) detect the beginning of Alzheimer's disease (4) establish if the particular, found cognitive impairment is susceptible to modification by mental exercises.

It seems that DTI are suitably only for detections of first enumerated clinical problem [4]. The analysis of the profiles of mentioned risk factors and results of the neuropsychological tests are more effective in resolution of other the highlighted here clinical problems.

References

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