Vascular risk and protective factors of dementia: role of PUFA and lipid metabolism

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Although Alzheimer’s disease (AD) and cerebrovascular disease (CVD) including vascular dementia (VaD) have quite different etiologic backgrounds, epidemiological studies revealed there are common risk factors in AD and CVD. Those risk factors can be classified into genetic, demographic, comorbidity and vascular risk factors. The APOE ε4 polymorphism is known to be a possible common genetic risk factor not only for AD and but also for CVD. The demographic risk factor includes aging, gender, history of head injury, whereas higher educational carrier and occupational attainment are regarded as protective factors against dementia. Frailty, sarcopenia and hypoalbuminemia are included in the comorbidity risk factors. The vascular risk factors encompass cerebrovascular lesions, hypertension in midlife, hypotension in late life, diabetes mellitus, hypercholesterolemia, congestive heart failure, and chronic kidney disease. Lacunar infarcts were frequently observed in elderly AD patients, and the cerebrovascular lesions, especially subcortical lacunar infarcts, play an important role in determining the presence and severity of the clinical symptoms of AD. Although hypercholesterolemia in midlife is known as a risk for dementia in late life, the epidemiological studies showed no significant association between the hypercholesterolemia and risk of dementia in elderly subjects. Recent study, however, revealed that statin use was associated with a significantly lower risk of dementia in the elderly patients. Epidemiological studies suggest a protective role of dietary omega-3 poly-unsaturated fatty acids (PUFA) including docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) against cognitive decline and AD. Our clinical study showed that cognitive function was closely associated with serum EPA concentration in elderly AD patients. Effective management of vascular risk and protective factors will be a promising tool for preventing cognitive decline in elderly subjects.