Abstract

Risk factors for age-related cognitive decline: a special role of reproductive history and inflammation

Cognitive aging can be a natural or pathological process of cognitive function decline with age, ranging from subjective cognitive impairment to cognitive deficits understood as dementia. This study represents an interdisciplinary research focusing on the evaluation of genetic, reproductive, and immunological risk factors for cognitive aging. A prospective study was conducted with a repeated measurement of cognitive functioning over 8 years in a sample of 177 postmenopausal women. In the initial assessment, ages ranged from 45 to 83 years (mean 61.3; SD = 9.9). Cognitive function was measured using the MMSE and CDT tests. The results indicate that over 8 years, the level of cognitive performance decreases on average by 1.02 MMSE points ($p < 0.0001$). Individuals with two ε alleles of gene coding apolipoprotein E (apoE) scored 2.33 MMSE points lower ($p = 0.0002$). Cognitive performance decreased by 0.28 MMSE points ($p = 0.0002$) with each daughter born but showed no association with the number of sons born. A 10% increase in tumor necrosis factor (TNF-α) concentration was associated with a 0.04 MMSE point decline ($p = 0.0279$), while a 10% increase in C-reactive protein (CRP) concentration was associated with a 0.03 MMSE point increase ($p = 0.0111$). CDT results did not show any associations with predictors. These findings underscore the importance of analysing reproductive factors in studies on cognitive aging.

Keywords: *age-related cognitive decline, cognitive ageing, reproductive burden, inflammation,* APOE *ε*