



MRI-BASED STUDY OF VARIOUS COGNITIVE IMPAIRMENTS: CROSS-SECTIONAL STUDY

Alibek Kossumov and Adil Supiyev

Laboratory of Epidemiology and Public Healthcare, Center for Life Sciences PI "National Laboratory Astana", JSC "Nazarbayev University"

alibek.kossumov@nu.edu.kz

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Introduction: Clinical and diagnostic criteria for cognitive impairments are based neurophysiological tests or the presence of a history of vascular disease and stroke following the MRI scan.

Materials and methods: The clinical data of 497 respondents collected in the form of standardized questionnaires and protocol, MRI data were examined. Respondents were divided by age groups (50-54, 55-59, 60-64, 65-69, 70-75) with approximately the same sex ratio in each group. Cognitive function was evaluated according to the results of neurophysiological tests. Verbal memory was evaluated by reminding a list of 10 nouns. Immediate recall was evaluated using correctly recalled words summarized over 3 consecutive 1-minute trials (range 0-30). Delayed feedback was evaluated after the interval during which other cognitive tests were introduced (range 0-10). Fluency was assessed by the number of animals named by the respondents within 1 minute. To assess attention, mental speed and concentration, participants were instructed to cross out two target letters embedded in a random letter grid, as quickly and accurately as possible, within 1 minute (range 0-65). Brain MRI was performed with cognitive test.

Results: When analyzing the assessment of verbal memory (range 0-30), the gradient of memory decline after 59 years per 1 word was clearly expressed. The analysis of verbal fluency and the assessment of attention and concentration also showed a decrease in memory (1-2 words less in each subsequent age group). According to the results of the final stage of testing, there was a tendency to decrease in the activity of long-term memory of both sexes with increasing age (more in men than in women). According to the MRI results, the respondents with the lowest cognitive function test results showed a picture of white matter lesion in the form of multiple foci of ischemia and local postischemic nodules, which might indicate the progression of dementia.

Conclusion: According to the results of the study, a correlation was revealed, with increasing age, the concentration of attention, memory decreases and cognitive impairment develops due to damage to the white matter of the brain due to ischemia, which can lead to dementia and Alzheimer's disease.