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Changes of executıve functions in normal aging, MCI and early Alzheimer's disease patients

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The aim of the study is to show both the changes and differences of executive functions in normal aging, mild cognitive impairment (MCI) and early Alzheimer's disease patients. 60 subjects participated in the study. Of these 60 subjects 20 were diagnosed as early AD (12 women, 8 men), 20 were diagnosed as MCI (10 women, 10 men) and the remaining 20 subjects were normal controls (9 women, 11 men) without any diagnosis. Early AD and MCI groups were matched in terms of age and education, neither the whole group nor male or female groups did not have any difference between the two patient groups. All patients underwent neuropsychological tests performed by an experienced neuropsychologist. The comprehensive battery comprised of several measures for different cognitive domains: measures of global and complex attention (Wechsler Memory Scale 3rd Revision-Digit Span subtest-DS, verbal fluency tasks and Stroop Color-Word Interference Test), measures of verbal memory (California Verbal Learning Test-CVLT) and measures of visual-spatial functions (Benton Facial Recognition Test-BFR, WAIS-R), measures of executive functioning Wisconsin Card Sorting Test. Verbal fluency tasks consisted of a lexical and semantic component in accordance with the convention. Animal naming was used for the purpose of semantic fluency. In our group comparison, all the executive functions show significant differences against the AD group. However, when the scores of the executive functions were compared with the normative scores published in the AD group averages, it was seen that the binary similarities and Stroop test did not fall below one standard deviation, which is the criterion of the individual evaluation of impairment judgment, except for the duration of interference, errors and spontaneous corrections. We conclude that the prefrontal heteromodal cortex, which is a neural substructure of executive functions in a manner appropriate to our initial hypothesis, may be explained by the fact that it is not involved in the weight of the posterior heteromodal cortex in early stage AD. In our study, we observed that our MCI patients exhibited different performances in terms of semantic fluency. This suggests that MCI patients who have not undergone semantic network degeneration within the same spectrum may be closer to normal, and those with significant impairment may be closer to those with very early AD, where prefrontal limbic degeneration begins. For further study, detailed evaluation of semantic fluency in a large number of MCI groups may result in inclusion of those with good semantic fluency performance in AD. We are of the opinion that this information may be promising in distinguishing the delimitation between MCI and early-stage AD, and that AD may be prompt in the early diagnosis and treatment.

Biography

Professor Nese Tuncer has graduated from Ankara University, Faculty of Medicine, and completed her neurology residency training at the neurology department of Marmara University Scholl of Medicine in Istanbul/ Turkey. Nese Tuncer received Master degree in Neuroscience at Experimental Medicine of Istanbul University Aziz Sancar Institutein 2002. In 2006 she became associate professor of neurology, and in 2014 she was awarded full professorship at Marmara University, Faculty of Medicine. Since her residency, Dr. Tuncer has been interested in cognitive neurosciences, neurodegenerative diseases, Alzheimer's disease and related disorders. She has 100 published manuscripts. She has authored over 50 articles about neurodegenerative diseases, dementia, cerebrovascular diseases and has written many book chapters, and gives lectures as an invited speaker at national and international meetings and institutions. She is the member of Alzheimer's Association International, Movement Disorder Society, Turkish Neurological Society.

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