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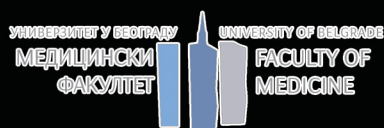
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The impact of sex on behavioral deficits in APP knock-in mouse model of Alzheimer's disease

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Alzheimer's disease (AD) is progressive age-associated brain disorder and the main cause of dementia in the elderly worldwide. It is also well-established that the prevalence and severity of AD is greater in women than in men, suggesting that sex is a crucial variable in disease heterogeneity.

Sex-biased differences in behavioral parameters related to cognition and depressive-like behavior were examined in novel, state-of-the-art mouse model of AD-like amyloidosis, APP^{NL-G-F} knock-in (KI) mice. Nonspatial and spatial memory were assessed using novel object recognition (NOR) and relocation test (NOL), respectively, while for depressive-like behavior tail-suspension test (TST) was used. Male and female APP^{NL-G-F} mice and their non-APP^{NL-G-F} KI littermates (WT) were tested at the age of 9 months.

Memory impairments were evident in both WT and APP^{NL-G-F} females in comparison to their male littermates. In NOL as a spatial variation of NOR, the discrimination index was decreased, but not in NOR as such. Furthermore, the decrease in total active immobility time in TST test was also detected in female WT and APP^{NL-G-F} mice vs. male mice suggesting more prominent depressive-like behavior as well. Examined parameters had similar pattern in WT and APP^{NL-G-F} mice of both sexes.

The results suggest prominent sex-biased differences in behavior of males and females in this particular model and support its validity for further studies revealing the impact of sex to behavioral deficits.

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