13th International Conference on Research in Behavioral and Social Sciences

12 - 14 June 2025 Vienna, Austria

The impact of mirror neurons on Alzheimer's care: From molecular insights to social interactions

Mert Ersözlü[1], Merve Alpay[2], Ayşegül Özyılmaz[3]

[1]Duzce University Vocational School of Health Science, Duzce TR, 81060
[2]Duzce University Faculty of Medicine Dep of Medical Biochemistry, Duzce TR, 81060
[3]Duzce University Faculty of Medicine Dep of Neurology, Duzce TR, 81060

ABSTRACT

Alzheimer's-type dementia has become significant condition affecting lifes of both individuals diagnosed with disease and their caregivers, especially within increasing prevalence. Due to nature of caregiving, which is deeply rooted human relationships, impacts not only receiving care but also those providing it. Mirror neurons form neural network that activates similarly in brain when individuals observe actions and emotions of others. This system plays critical role in social interaction, empathy, and learning. That hypothesized, along with the cognitive decline observed in Alzheimer's patients, mirror neuron system may also be impaired. This study aims to investigate Mneuron activity in Alzheimer's patients at molecular level and evaluate potential effects on social bonds. The study included 24 individuals the mid-stage of Alzheimer, 24 caregivers, and 30 healthy control group. All participants underwent MMSE testing and BAKAS scale was applied. Reelin and G-protein levels were measured from blood samples spectrophotometrically. Results showed that Reelin and G-protein levels, which are associated with mirror neuron activity, were decreased in Alzheimer group compared to caregivers and control group. Additionally, Alzheimer's patients scored lower on BAKAS and RGB scales. Interestingly Reelin and G-protein levels increased in correlation with duration of caregiving. These findings suggest that disruptions the mirror neuron system's function in Alzheimer's patients may negatively affect social interaction and empathy abilities. Moreover, highlight the importance of social support during caregiving process, ongoing social communication between caregivers and patients appears to stimulate mirror neuron activity. This also opens the door for development new therapeutic approaches targeting mirror neuron activity.

Keywords: Alzheimer's disease; mirror neuron; social interaction; caregiver; Reelin