

5th International Conference on

Alzheimer's Disease & Dementia

September 29-October 01, 2016 London, UK

The Role of Mental and Physical Activities against Development of Alzheimer's disease in Socialized and Isolated Rats

Azza A Ali¹, Mona G Khalil², Hemat A Elariny¹ and Karema Abu-Elfotuh¹

¹Al-Azhar University, Egypt

²Modern University for Technology and Information, Egypt

Background: Alzheimer's disease (AD) is a progressive neurodegenerative disorder; lifestyle changes may slow its onset and progression. Mental and physical activities have been associated with better cognitive function in healthy older adults. Cognitive engagement and physical activities have been associated with decreased risk of AD. Social isolation refers to a complete absence of or insufficient contact with other members of society and can exacerbate memory deficits.

Objective: To study the influence of mental and physical activities in normal socialized conditions as well as to evaluate their role in social isolated conditions on normal and AD rat models.

Methods: Rats were divided into two main groups; Group I socialized and Group II isolated. Both socialized and isolated groups were subdivided into four subgroups; two received saline and served as control, while two served as AD subgroups and received ALCl₃ (70mg/kg IP) every day for four weeks. One of the control and AD subgroups was exposed to mental and physical activities but the other not exposed. Mental and physical activities were performed using Swimming test and Y-maze (each for one time/week) during four weeks. Isolated rats were housed individually in cages covered with black plastic while socialized rats randomly paired and housed in transparent covered cages. Histopathological changes in different brain regions and biochemical changes in A β , ACHE, brain monoamines (DA, NE, 5-HT), inflammatory mediators (TNF- α , IL-1 β), oxidative parameters; (MDA, SOD, TAC) as well as brain derived neurotrophic factor (BDNF) were also measured for all groups.

Results: Brain neurological damage characterizing isolation was more pronounced in isolation-associated AD rats. Mental and physical activities significantly decreased A β , ACHE, MDA, TNF- α , IL-1 β together with increased SOD, TAC, DA, NE, 5-HT and BDNF. The protective effect of mental and physical activities against brain neuronal degenerations was more marked in isolated rats especially in isolated-associated AD rats. These results were confirmed by histopathological examinations of different brain regions.

Conclusion: Mental and physical activities can protect from brain neuronal degenerations either induced by isolation or that associated with AD in both socialized and isolated rat models. The protection using mental and physical activities is more pronounced in isolation-associated AD model.

Biography

Azza A Ali has completed her PhD from Faculty of Pharmacy, Cairo University and postdoctoral studies from Faculty of Pharmacy, Al-Azhar University. She is the Head of Pharmacology and Toxicology Department, Al-Azhar University, Egypt. She has published more than 35 papers in reputed journals and developed research line in behavioral pharmacology in Egypt. She is member of many scientific societies in Egypt and of (AAPS) American Association of Pharmaceutical Scientists (2002). She is interested in CNS degenerations and disorders especially AD and dementia and has many researches and publications on its causes, prevention and risk factors especially stress and malnutrition. She is an Editorial Board Member at journal of Acta Psychopathologica.

azzamoro@gmail.com