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AUDİTORY OBJECTİVE MEASURES
ELECTROPHYSİOLOGY & AUDİTORY EVOKED POTENTİALS

Evaluation of Cognitive Functions with P300 in Individuals Diagnosed with Alzheimer's Disease: Comparison of Nursing Home and Family Settings.

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Abstract

Alzheimer's disease is an increasing social problem for patients, their caregivers, and the cost of the disease. Alzheimer's patients can stay at home or in a nursing home/nursing home. Staying in a familiar environment makes the patient feel safe and ensures the protection and improvement of the patient's quality of life.

Objectifs

This study compares the cognitive functions of Alzheimer's patients staying in different environments with the auditory evoked P300 test.

Thirteen participants diagnosed with Alzheimer's disease and living at home and 18 participants residing in a nursing home/nursing home were included in the study. Participants with a prior history of psychiatric or neurologic illness, inability to give self-consent, any addiction, or severe hearing loss were excluded. Informed consent was obtained from all participants to participate in the study.

Méthodes et Matériels

The P300 wave is an auditory evoked potential which was recorded by Auditory Evoked Potential P300 (Chartr™EP, GN otometrics, Denmark) in this study. Five Ag/AgCl (silver/silver chloride) disk electrodes were used for recording. Active electrodes were placed in the Fz (frontal) and Cz (central) regions, reference electrodes in the bilateral mastoid region, and the ground electrode in the frontal area with the help of conductive paste. The standard auditory “oddball paradigm” was used as the stimulation method. Two hundred fifty stimuli (7-10 minutes) were delivered for each subject. The patient was instructed to press the button on their hand when they heard the sounds in the thin tone (2kHz, 75 dB), which occurred randomly with a frequency of 20%, by distinguishing between the sounds in the thick tone (1 kHz, 75 dB) that were repeated with a frequency of 80%. The screen, where the analysis time is set to 1 second, will comprise ten small frames of 0.1 seconds. The traces obtained from the potentials from pressing the button by paying attention to the target stimuli were evaluated.The stimuli were presented binaurally for 1–3 s in a random order.

Résultats

Table 1. Age distribution of the participants by groups and sex

	Nursing Home (n:18)	Family Enviroment (n:13)	p
Age (years)(Mean ±SD)	82.18±7.52	77.69±8.84	0.131*
Sex (Male/Female)	11/7	4/9	0.857†

Table 2. Comparison of P300 responses of the groups participating in the study

	Nursing Home (n:18)	Family environment (n:13)	p
	Mean ±SD	Mean ±SD	
P300 Latency (ms)	331,52 ± 18,74	316,12 ± 23,35	0.062
P300 Amplitude (µV)	4,32 ± 3,47	4,37 ± 2,00	0.959

Table 3. Comparison of P300 values of participants according to gender

	Female (n: 16) Mean ±SD	Male (15) Mean ±SD	p
P300 Latency (ms)	331,52 ± 18,74	316,12 ± 23,35	0.888
P300 Amplitude (µV)	4,32 ± 3,47	4,37 ± 2,00	0.429

Conclusion

The P300 response is closely related to cognitive functions. Cognitive functions are affected by the environment. p300 response may reflect accelerated aging in Alzheimer's disease. In line with the current data, no difference was found in p300 response in Alzheimer's patients living in nursing homes and home environments. These results are a preliminary report of our ongoing study. Results will be published when sufficient patient data are completed.

Références

1. Ferri CP, Prince M, Brayne C, Brodaty H, Fratiglioni L, Ganguli M, et al. Global prevalence of dementia: a Delphi consensus study. The lancet. 2005;366(9503):2112-7.
2.Basar E. Memory and brain dynamics: Oscillations integrating attention, perception, learning, and memory: CRC press; 2004.
3.Yener G, Güntekin B, Başar E. Event-related delta oscillatory responses of Alzheimer patients. European Journal of Neurology. 2008;15(6):540-7.

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