뇌신경재활

게시일시 및 장소 : 10 월 18 일(금) 13:15-18:00 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 15:45-16:30 Room G(3F)

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Effectiveness of Computer-Based Cognitive Training on Patients with Acquired Brain Injury

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Objective

Most of the patients with acquired brain injury suffer from cognitive decline which may affect one's ability to carry out activities of daily living. Among many domains of cognitive function, working memory and executive function is representative ones to show decline in these patients. Although many kinds of cognitive rehabilitation methods are being examined, there was no significantly effective one in improving working memory and executive function. The purpose of this study is to examine the effect of cognitive rehabilitation using computer-based training program on working memory and executive function in patients with acquired brain injury.

Subjects and Methods

Eighteen acquired brain injury patients who admitted or transferred to our department and were able to obey 1-step command consistently were included. We applied 2 weeks of computer-based cognitive training program(RehaCom®) in addition to regular rehabilitation programs. We used Korean-Mini Mental Status Examination(K-MMSE), Korean-Montreal Cognitive Assessment (K-MoCA), Modified Barthel Index(MBI) and Trail-making test(A,B), Digit span test(forward, backward), Symbol search, Digit-symbol coding, Controlled Oral Word Association Test(COWAT)(Semantic, Phonemic) for examining patients' cognitive function, especially focused on working memory and executive functioning.

Results

Subjects showed statistically significant improvements in overall score of K-MMSE, K-MoCA, Trail-making test(A), Symbol search, Digit-symbol coding test($P<.05$). In sub-scores of K-MMSE, time orientation, attention/calculation, delayed word recall and language scores showed improvements($p<.01$). In sub-scores of K-MoCA, orientation, visuospatial/executive, attention, naming and language scores showed improvements($p<.05$).

Conclusion

Computer-based cognitive training for acquired brain injury patients is effective in improving cognitive function, especially on attention and executive function.

Table 1 Comparison of cognitive function outcomes before and after treatment

	Before treatment	After treatment	t-score	p-value
K-MMSE	21.28±3.05	24.56±3.45	-5.48	**.000***
Time orientation	3.00±1.12	3.88±1.22	-3.12	**.007***
Place orientation	4.41±0.80	4.76±0.56	-1.85	.083
Attention/calculation	1.97±1.25	2.76±1.68	-2.31	**.034***
Delayed recall	1.35±1.17	1.88±1.11	-3.04	**.008***
Language	6.76±1.25	7.41±0.71	-3.40	**.004***
Visuo-spatial	0.53±0.51	0.59±0.51	-0.436	.668
K-MoCA	13.76±3.60	17.12±4.34	-4.27	**.001***
Visuospatial/Executive	1.56±1.03	2.56±1.21	-3.04	**.008***
Naming	2.19±0.83	2.44±0.81	-2.24	**.041***
Memory encoding	3.13±0.89	3.50±0.82	-1.86	.083
Memory recall	0.25±0.58	0.44±0.89	-1.15	.270
Attention	3.50±1.21	4.25±1.39	-2.32	**.035***
Language	1.88±0.62	2.25±0.58	-2.42	**.029***
Abstraction	0.25±0.68	0.19±0.54	1.00	.333
Orientation	3.88±1.46	4.88±1.20	-3.16	**.006***
Trail-making test (A)	129.36±115.81	83.36±100.17	2.43	**.030***
Trail-making test (B)	234.71±109.31	211.93±113.18	1.43	.178
Digit span (forward)	5.39±1.24	5.44±1.20	-0.22	.82
Digit span (backward)	2.78±1.00	3.11±1.32	-1.46	.16
COWAT (Semantic)	8.41±4.23	9.71±3.48	-1.61	.13
COWAT (Phonemic)	4.19±4.17	4.88±3.81	-1.51	.15
Symbol search	10.57±7.21	14.71±10.53	-2.55	**.043***
Digit-symbol coding	20.78±19.11	27.89±22.13	-3.43	**.009***

Mean±SD, K-MMSE: Korean Mini-Mental Status Examination, K-MoCA: Korean Montreal Cognitive Assessment, COWAT: Controlled Oral Word Association Test, *:Statistically significant, p<.05