

뇌신경재활

게시일시 및 장소 : 10 월 19 일(토) 08:30-12:30 Room G(3F)

질의응답 일시 및 장소 : 10 월 19 일(토) 11:00-11:30 Room G(3F)

P 3-99

Profile of intellectual declines in carbon monoxide intoxication patients ; case report

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Background

Carbon monoxide (CO) intoxication has delayed effects on the cerebral white matter characterized as bilateral lesions that reflect diffuse demyelination. This process is thought to be related to delayed cognitive sequelae. Cerebral white matter lesions (WMLs) are considered to be associated with psychomotor slowing which is important function of frontal lobe. Several studies indicate that speed of cognitive processes appear to be affected by WMLs. For this reason, psychomotor speed is expected to decrease in CO intoxication patients.

Case report

Three CO intoxication patients were admitted to the A hospital On December 18, 2018. They were unconscious at the time of admission. They recovered their alert mentality after intubation and high-pressure oxygen treatment. They were discharged after finishing the acute phase treatment during 7 to 25days. After that, they were admitted B hospital for comprehensive rehabilitation and evaluation. Cognitive function test include K-MMSE (Korean Mini-Mental Status Examination), K-WAIS-IV (Korean Wechsler Adult Intelligence Scale- IV), and CDR (Clinical Dementia Rating) were performed to assess cognitive abilities by Clinical psychologist. Three patients were expected to graduate from private high school and they had excellent academic performance. In the case of patient A, he was given a perfect score in the Mathematics of SAT test. Patients B and C also had excellent academic ability, ranking 9th and 30th overall. The results of the Cognitive function test in three patients are indicated in Table 1. The test results showed that the MMSE scores were perfect score of 30 in all patients. However, considering the patients' previous academic ability, the FSIQ (Full Scale Intelligence Quotient) score were reduced in all patients. Especially, The PSI (Processing Speed Index) was significantly lower in patients A and B. These results suggest that the processing speed is the most affected characteristic in CO intoxication patients. In patient C, VCI (Verbal Comprehension Index) was the highest level, but other indices resulted a lower value when compared with VCI. Unlike other indices, the VCI is less susceptible to the impairment of processing speed because there is no part to perform a given task within a limited time when it is assessed. So, This could be considered as an overall decrease in the index excluding the VCI in patient C.

Conclusion

Considering the patients' previous academic performance, These cases suggest a significant decrease in intellectual ability in CO intoxication patients. In addition, processing speed is most affected feature by CO intoxication. Therefore, it is necessary to evaluate the intellectual ability, especially the processing speed impairment in CO intoxication patients.

Table 1. The results of Cognitive function test in three CO intoxication patients.

	A	B	C
Level of Education	High school student	High school student	High school student
K-MMSE	30	30	30
FSIQ	93(31%)	107(67%)	115(84%)
VCI	104(61%)	126(96%)	137(99%)
PRI	103(57%)	126(96%)	100(50%)
WMI	96(39%)	107(67%)	98(46%)
PSI	72(3%)	89(23%)	107(69%)
CDR	0	0	0