

척수재활

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)

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The factors Influencing Cerebral Hemodynamics according to Postural Change

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Objective

The purpose of this study was to analyze the the factors influencing cerebral hemodynamics according to postural change in high-level spinal cord injury using duplex ultrasonography.

Materials and Methods

We examined carotid duplex ultrasonography during head-up tilt in 24 patients with cervical spinal cord injury. The internal carotid artery on right side were studied and intravascular flow volumes were measured by using a 9 MHz linear array transducer. The CBFV and blood pressure (BP) were measured in the supine position, immediately tilted 50 degrees and after 5 minutes after tilted 50 degrees. We analyzed the characteristics of people who deviate from the general tendency between the changes of BP and CBFV according to postural change. We sought to compare patients by dividing them into three subgroups, subgroup2 (1 if systolic blood pressure (SBP) difference > 20 when tilted 50 degrees, 0 if not.), subgroup3 (1 if CBFV difference when tilted 50 degrees > 20%, 0 if not.) and subgroup4 (1 if it is on general tendency, 0 if not.)

Results

A total of 24 patients with high spinal cord injury were analyzed in this study. Subject ages ranged from 21 to 88 years with a mean of 56.83 years and the study group was composed of 18 men and 6 women. Table 2 shows a significant correlation between changes in CBF and diastolic blood pressure (DBP) and motor score ($p < 0.05$). Height and K-SCIM score also showed some correlation ($p < 0.1$). Table 3 shows that the total motor score difference between the two groups of Subgroup 2 is significant and that the difference between the two groups of subgroup 3 is significant in the motor score in low extremities ($p < 0.05$). In subgroup 4, no significant change was observed. This analysis also did not confirm the difference in the level of spinal cord injury or ASIA impairment scale, which we thought would be different between the groups.

Conclusions

Suggesting that motor score may be an indicator for predicting orthostatic hypotension in patients with high spinal cord injury. This study analyzed only for 24 patients and it is expected that it will be necessary to analyze and analyze the characteristics of more patients.

Table 1) Demographic and clinical characteristics

Characteristics	N=24
Sex (n)	M:18 F:6
Age (years)	56.83±16.19
ASIA scale(A:B:C:D)	3:1:5:15
NLI(level)(C2:C3:C4:C5:C6:C8)	1: 2:9:10:1:1
DM	1:23
HTN	7:17
BWT(kg)	66.48±16.99
BMI(kg/m2)	23.78±5.03
onset to evaluation	180.50±230.18

ASIA, American Spinal Injury Association; NLI, Neurologic Level of Injury; DM, Diabetes; HTN, Hypertension; BWT, Body weight; HTN, Hypertension; BMI, Body Mass Index

Table2) Correlation between the changes in cerebral blood flow volume and the factors

	R ²
	CBFVD>20%
CBFVD>20%	1
Age	0.072
Height(cm)	0.363*
Bwt.(kg)	0.051
BMI(kg/m2)	-0.163
SBP(0)	-0.222
DBP(0)	-0.402**
HR(0)	0.213
MS_UE	-0.081
MS_LE	-0.287
MS_TOTAL	-0.398**
SS_LT	0.264
SS_PP	-0.088
SS_TOTAL	0.093
K_SCIM	-0.366*

CBFVD>20%, Cerebral blood flow volume difference when tilted 50degrees>20%; MS, Motor Score; SS, Sensory score; UE, Upper extremity; LE, Lower extremity; LT, Light touch; PP, Pin prick; SCIM, Spinal cord independence measure

*P<0.1, **P<0.05

Table 3) Correlation between the factors and Subgroup2, 3 and 4

Subgroup 2 (N)		Mean±SD	subgroup3(N)		Mean±SD	subgroup 4(N)		Mean±SD
MS	0 (13)	35.08±4.89	MS	0 (13)	31.50±12.17	MS	0 (13)	31.00±12,55
(UE)	1 (11)	27.36±15.76	(UE)	1 (11)	31.57±11.74	(UE)	1 (11)	31.87±11,53
MS	0 (13)	30.69±15.07	MS	0 (13)	32.80±13.64	MS	0 (13)	25.44±19,21
(LE)	1 (11)	20.36±18.55	(LE)	1 (11)	21.07±18.24*	(LE)	1 (11)	26.27±16,57
Total	0 (13)	65.77±15.34*	Total	0 (13)	64.30±25.29	Total	0 (13)	56.44±25,82
(MS)	1 (11)	47.73±27.17*	(MS)	1 (11)	52.64±20.76	(MS)	1 (11)	58.13±22,04
SS	0 (13)	70.00±25.27	SS	0 (13)	66.20±28.97	SS	0 (13)	57.78±27,43
(LT)	1 (11)	59.45±29.20	(LT)	1 (11)	64.43±26.72	(LT)	1 (11)	69.60±26,79
SS	0 (13)	70.23±25.21	SS	0 (13)	66.50±28.94	SS	0 (13)	57.78±27,43
(PP)	1 (11)	52.55±27.76	(PP)	1 (11)	59.00±26.79	(PP)	1 (11)	64.73±27,91
Total	0 (13)	140.23±46.16	Total	0 (13)	132.70±52.89	Total	0 (13)	115.56±54,86
(SS)	1 (11)	112.00±55.92	(SS)	1 (11)	123.43±52.56	(SS)	1 (11)	134.33±50,38
K-	0 (13)	56.15±34.85	K-	0 (13)	57.90±39.94	K-	0 (13)	43.22±32,06
SCIM	1 (11)	40.00±30.43	SCIM	1 (11)	42.21±27.17	SCIM	1 (11)	52.07±34,56

*P-value <0.05