

## POSTER SESSION 2

게시 및 질의응답 일시 : 2018 년 10 월 26 일(금) 13:15-18:00/15:45-16:30

장소 : 3F 그랜드볼룸

### P 2-1

#### Location of white matter lesions in the swallowing function of older patients with mild stroke

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##### Purpose

Older patients with stroke have poor functional prognosis compared to younger patients. Patients with stroke who have severe white matter (WM) lesions have been reported to have swallowing problems. Recently, there is growing evidence suggesting that clinical significance can be indicated by the anatomic location of white matter lesions and whether the functional integrity of specific fiber bundles is affected. The aim of this study was to determine whether the location of WM lesions affects swallowing function in older patients with mild stroke.

##### Materials and Methods

We conducted a retrospective analysis of 88 patients aged >65 years who had a National Institutes of Health Stroke Scale (NIHSS) score  $\leq 5$  and who underwent videofluoroscopic swallowing examination after their first stroke. The involvement of CBT was determined by two trained researchers depending on the change of signal intensity at the location of CBT, almost halfway between the most anterior and the most posterior points of the lateral ventricle, almost one-third between the midline and the most lateral point of the brain, and anterior and medial compared with the corticospinal tract. Participants were divided into three groups according to the WM lesion's involvement of corticobulbar tract (CBT) as follows: group I, no involvement of CBT; group II, involvement of CBT in one hemisphere; and group III, involvement of CBT in both hemispheres.

##### Results

Significant differences were observed in the Fazekas grade (PVH), Fazekas grade (DWH), sum score of Fazekas grade, and the laryngeal elevation abnormality among three groups according to the CBT involvement. (Table 1) Statistically significant correlations were observed between the involvement of CBT and delayed pharyngeal transit time and inadequate laryngeal elevation. (Table 2) Linear regression analysis showed that pharyngeal transit time tended to increase according to the involvement of CBT in WM lesion ( $p=0.043$ ). In addition, inadequate laryngeal elevation was related to the involvement of CBT ( $p=0.016$ ). Early spillage, inadequate laryngeal elevation and penetration could also be predicted by Fazekas grade. (Table 3)

## Conclusions

In summary, our Results suggest that WM lesion location involving the CBT might affect the integrity of the tract that Results in dysphasia in older patients with mild stroke, regardless of the initial stroke severity. Accordingly, the location of WM lesions can be regarded as a potential predictive factor for dysphagia. Moreover, in patients with WM lesions involving CBT, detailed evaluation of dysphagia is required.

Table 1. Characteristic of three groups according to involvement of corticobulbar tract in white matter lesion<sup>†</sup>

	Group I (n=45) <sup>‡</sup>	Group II (n=25) <sup>‡</sup>	Group III (n=18) <sup>‡</sup>	p value <sup>‡</sup>
Age, years <sup>‡</sup>	69.2 ± 3.1 <sup>‡</sup>	75.64 ± 7.2 <sup>‡</sup>	80.33 ± 5.26 <sup>‡</sup>	0.068 <sup>‡</sup>
Sex (male/female) <sup>‡</sup>	21/24 <sup>‡</sup>	10/15 <sup>‡</sup>	10/8 <sup>‡</sup>	0.605 <sup>‡</sup>
Lesion side (right/left/bilateral) <sup>‡</sup>	21/21/3 <sup>‡</sup>	11/11/3 <sup>‡</sup>	11/7 <sup>‡</sup>	0.796 <sup>‡</sup>
Lesion location (supratentorium/infratentorium) <sup>‡</sup>	30/15 <sup>‡</sup>	21/4 <sup>‡</sup>	12/6 <sup>‡</sup>	0.293 <sup>‡</sup>
NIHSS <sup>‡</sup>	2.75 ± 1.48 <sup>‡</sup>	2.68 ± 1.38 <sup>‡</sup>	2.61 ± 1.72 <sup>‡</sup>	0.921 <sup>‡</sup>
Interval between onset of stroke and VFSS, days <sup>‡</sup>	10.13 ± 8.99 <sup>‡</sup>	8.24 ± 6.48 <sup>‡</sup>	10.89 ± 6.75 <sup>‡</sup>	0.371 <sup>‡</sup>
Fazekas grade (PVH) <sup>‡</sup>	1.47 ± 0.99 <sup>‡</sup>	1.72 ± 0.94 <sup>‡</sup>	2.33 ± 0.69 <sup>‡</sup>	0.006* <sup>‡</sup>
Fazekas grade (DWH) <sup>‡</sup>	0.49 ± 0.63 <sup>‡</sup>	0.96 ± 0.68 <sup>‡</sup>	1.56 ± 0.92 <sup>‡</sup>	0.000* <sup>‡</sup>
Sum score of Fazekas grade <sup>‡</sup>	1.96 ± 1.35 <sup>‡</sup>	2.68 ± 1.38 <sup>‡</sup>	3.89 ± 1.53 <sup>‡</sup>	0.000* <sup>‡</sup>
Lip sealing <sup>‡</sup>	43/2 (4.4%) <sup>‡</sup>	21/3 (12.0%) <sup>‡</sup>	13/5 (27.8%) <sup>‡</sup>	0.052 <sup>‡</sup>
Mastication <sup>‡</sup>	21/24 (53.3%) <sup>‡</sup>	16/9 (36%) <sup>‡</sup>	10/8 (44%) <sup>‡</sup>	0.315 <sup>‡</sup>
Bolus formation <sup>‡</sup>	20/25 (55.6%) <sup>‡</sup>	15/10 (40%) <sup>‡</sup>	9/9 (50%) <sup>‡</sup>	0.464 <sup>‡</sup>
Oral transit time <sup>‡</sup>	0.52 ± 0.59 <sup>‡</sup>	0.41 ± 0.22 <sup>‡</sup>	0.69 ± 1.10 <sup>‡</sup>	0.620 <sup>‡</sup>
Early spillage <sup>‡</sup>	28/17 (37.8%) <sup>‡</sup>	14/10 (40%) <sup>‡</sup>	13/5 (27.8%) <sup>‡</sup>	0.494 <sup>‡</sup>
Oral remnant <sup>‡</sup>	24/21 (46%) <sup>‡</sup>	18/7 (28%) <sup>‡</sup>	11/7 (38.9%) <sup>‡</sup>	0.314 <sup>‡</sup>
Swallowing response time <sup>‡</sup>	0.34 ± 1.18 <sup>‡</sup>	0.37 ± 0.27 <sup>‡</sup>	0.34 ± 0.14 <sup>‡</sup>	0.299 <sup>‡</sup>
Pharyngeal transit time <sup>‡</sup>	0.53 ± 0.51 <sup>‡</sup>	0.53 ± 0.29 <sup>‡</sup>	0.56 ± 0.22 <sup>‡</sup>	0.139 <sup>‡</sup>
Laryngeal elevation <sup>‡</sup>	36/9 (20%) <sup>‡</sup>	19/6 (24%) <sup>‡</sup>	9/9 (50%) <sup>‡</sup>	0.032* <sup>‡</sup>
Penetration <sup>‡</sup>	20/25 (44.4%) <sup>‡</sup>	11/14 (44%) <sup>‡</sup>	5/13 (27.8%) <sup>‡</sup>	0.450 <sup>‡</sup>
Aspiration <sup>‡</sup>	14/31 (31%) <sup>‡</sup>	5/20 (20%) <sup>‡</sup>	4/14 (22%) <sup>‡</sup>	0.551 <sup>‡</sup>

Values are presented as mean ± SD or number of subjects (proportion of abnormal finding).<sup>‡</sup>

Table 2. Partial correlation coefficients between CBT involvement and VFSS findings<sup>†</sup>

VFSS findings <sup>‡</sup>	Correlation coefficient <sup>‡</sup>
Lip sealing <sup>‡</sup>	0.200, p=0.065 <sup>‡</sup>
Mastication <sup>‡</sup>	0.121, p=0.265 <sup>‡</sup>
Bolus formation <sup>‡</sup>	0.173, p=0.111 <sup>‡</sup>
Oral transit time <sup>‡</sup>	0.022, p=0.838 <sup>‡</sup>
Early spillage <sup>‡</sup>	0.021, p=0.851 <sup>‡</sup>
Oral remnant <sup>‡</sup>	0.013, p=0.909 <sup>‡</sup>
Swallowing response time <sup>‡</sup>	0.164, p=0.223 <sup>‡</sup>
Pharyngeal transit time <sup>‡</sup>	0.206, p=0.047* <sup>‡</sup>
Laryngeal elevation <sup>‡</sup>	0.282, p=0.008* <sup>‡</sup>
Penetration <sup>‡</sup>	0.040, p=0.716 <sup>‡</sup>
Aspiration <sup>‡</sup>	0.084, p=0.443 <sup>‡</sup>

Values are adjusted for the age, NIHSS, Fazeka sum score. <sup>‡</sup>

\*p<0.05<sup>‡</sup>

Table 3 | Factors Affecting VFSS findings: Multivariate Prediction Models Using Logistic Regression Analysis<sup>†</sup>

VFSS parameters <sup>‡</sup>	OR <sup>‡</sup>	95% CI <sup>‡</sup>	p-value <sup>‡</sup>
Early spillage <sup>‡</sup>	<sup>‡</sup>	<sup>‡</sup>	<sup>‡</sup>
Fazeka sum score <sup>‡</sup>	4.112 <sup>‡</sup>	1.012-2.054 <sup>‡</sup>	0.043 <sup>‡</sup>
Laryngeal elevation <sup>‡</sup>	<sup>‡</sup>	<sup>‡</sup>	<sup>‡</sup>
Fazeka sum score <sup>‡</sup>	4.237 <sup>‡</sup>	0.351-0.975 <sup>‡</sup>	0.040 <sup>‡</sup>
CBT involvement <sup>‡</sup>	3.951 <sup>‡</sup>	1.294-12.064 <sup>‡</sup>	0.016 <sup>‡</sup>
Pharyngeal transit time <sup>‡</sup>	<sup>‡</sup>	<sup>‡</sup>	<sup>‡</sup>
CBT involvement <sup>‡</sup>	1.962 <sup>‡</sup>	0.037-0.176 <sup>‡</sup>	0.043 <sup>‡</sup>
Penetration <sup>‡</sup>	<sup>‡</sup>	<sup>‡</sup>	<sup>‡</sup>
Fazeka sum score <sup>‡</sup>	1.533 <sup>‡</sup>	1.068-2.201 <sup>‡</sup>	0.020 <sup>‡</sup>

OR, Odds ratio; CI, Confidence interval; CBT, corticobulbar tract<sup>‡</sup>