P 2-102

Relationship between Speech Mechanism Disorder and Dysphagia in Patients with Acquired Brain injury

Kil Byung Lim[1†], Jiyong Kim[1], Hojin Lee[1], Sangwan Lee[1], Sungsik Son[1], Haseong Kim[1*]

Inje University Ilsan Paik Hospital, Department of Rehabilitation Medicine[1]

Objective
Dysphagia is common symptom in patients with acquired brain injury and contributes to the risk of aspiration pneumonia, which is one of the main causes of death in stroke patients. Deglutition is made through harmonic movements of Oropharyngeal structures and can be evaluated radiologically by video fluoroscopic swallowing study(VFSS). Since dysphagia is related to oropharyngeal anatomy, patients with dysphagia often present dysarthria or dysphonia simultaneously. Appropriate speech is also made through elaborate coordination of respiratory, vocal and articulatory organs. The purpose of this study is to find relationship between speech mechanism and dysphagia in patients with acquired brain injury.

Subjects and Methods
The charts of forty-four patients with acquired brain injury who admitted or transferred to our department and were examined and diagnosed to have clinical dysarthria by two different physicians and who could obey more than 2-step command consistently were reviewed in this study. Results of Speech Mechanism Screening Test(SMST), which is standardized study for Korean people from Oral Speech Mechanism Screening Examination-Revised(OSMSE-R) were collected. Also Penetration Aspiration Scale(PAS) and other subscales of VFSS were collected. Lastly, cognitive test results including Mini-mental status examination(MMSE) and Montreal Cognitive Assessment(MoCA) which could affect the results above were also collected. The correlation between these outcomes was statistically analyzed.

Results
While Overall score and subscores of SMST showed no correlation with PAS or residual volume at oropharyngeal structures, oral transit time which is closely related to oral phase of swallowing mechanism showed strong correlations. Structural($r=-.479$, $p=.001$), functional($r=-.348$, $p=.021$), Diadochokinetic($r=-.412$, $p=.005$) and overall($r=-.574$, $p<.001$) scores of SMST showed negative correlation with oral transit time. Besides functional score of SMST showed positive correlation with cognitive test results also; MMSE($r=.412$, $p=.005$),

MoCA(r=.631, p=.001), and oral transit time also showed positive correlation with MMSE(r=-.391, p=.009) and MoCA(r=-.464, p=.017).

Conclusion

The integrity speech mechanism have close relationship with oral phase of swallowing, especially oral transit time.

Table 1 Pearson's correlation efficient between SMST scores and oral transit time, p-value specified.

	Oral transit time	
	r	p-value
Structural	-.479	.001**
Functional	-.348	.021*
Phonetic	-.274	.072
Diadochokinetic	-.412	.005**
Overall	-.574	.000**

*,**:Statistically significant, *;p<.05, **;p<.01

Table 2 Pearson's correlation efficient between SMST scores, oral transit time and cognitive test results

	Overall	Structural	Functional	Diadochokinetic	MMSE	MoCA
Overall	1.00					
Structural	.536**	1.00				
Functional	.731**	.439**	1.00			
Diadochokinetic	.647**	.025	.155	1.00		
MMSE	**.379***	.227	**.412****	.210	1.00	
MoCA	**.526****	.439*	**.631****	.157	.883**	1.00
Oral transit time	**-.574****	**-.479****	**-.348***	**-.412****	**-.391****	**-.464***

All values in bold print are clinically important ones in this study, *,**:Statistically significant, *;p<.05, **;p<.01