P 3-21

The Difference between Maximal phonation test in stroke patients with supra & infratentorial lesion

Ju Young Lim[1*], Kyung Lim Joa[1], Han Young Jung[1†]

Inha University School of Medicine, Department of Physical & Rehabilitation Medicine[1]

Objective
Dysphagia affects many stroke patients and may cause pneumonia and fatal outcome. There are many screening test to evaluate dysphagia in post-stroke patients, but there is no agreed gold standard test. Maximum Phonation Time (MPT) is a good screening test on bedside to identify pharyngeal function. The Purpose of this study is the relationship between MPT and aspiration and validity of using MPT as a bedside screening test for the risk of aspiration in acute and subacute stroke patients with supratentorial and infratentorial lesion.

Subjects and Methods
Total 106 patients who suffered from acute and subacute stroke with dysphagia were consecutively admitted to ○○ hospital. We checked the MPT, Parramatta Hospitals Assessment of Dysphagia (PADH) before the video fluoroscopic swallowing study (VFSS) and confirmed the factors associated with dysphagia. To find the difference between supratentorial lesion and infratentorial lesion, student's t-test was performed. To find the relationship between dysphagia evaluating value in each group, Spearman correlation analysis was performed with independent variable including the Penetration-Aspiration Scale (PAS), MPT, the American Speech-Language Hearing Association National Outcome Measurement System Swallowing Scale (ASHA-NORMS), and the Functional Dysphagia Scale (FDS), and the Age, and PAHD.

Results
Of the total 106 acute and subacute stroke patients with evaluating dysphagia, supratentorial lesion is 82 and infratentorial lesion is 24. Mean values for MPT were 9.47s in supratentorial group and 8.38s in infratentorial group. MPT and ASHA-NOMS were significant different between two groups (Table 1). In the analysis of the correlations, the MPT was correlated significantly with the PAS, ASHA-NOMS, FDS (Table 2, 3). PAHD was correlated with MPT in supratentorial group but not in infratentorial group. According to ROC analysis, we suggest cut off value of MPT is 7.94s (sensitivity = 93.5%, specificity = 90.0%) in supratentorial group and 6.22s (sensitivity = 94.4%, specificity = 83.3%) in infratentorial group.

Conclusion
This research comes to the Conclusion that the MPT has a great matter of importance on dysphagia evaluation in both supratentorial and infratentorial lesion stroke patients. The Results suggest that the MPT may be a useful early screening test for detecting patients

who may be at risk for aspiration in both group and predict better Results in stroke with infratentorial lesion group.

Table 1. Demographic characteristics

Characteristics	Supratentorial	Infratentorial	t-test(*p*)
Patient (N)	82	24	
Male(N)	34 (41.5%)	10 (41.7%)	
Female(N)	48 (58.5%)	14 (58.3%)	
Onset-VFSS (days)	24.67 ± 18.60	12.08 ± 8.97	
MPT(s)	9.47 ±2.65	8.38 ±1.97	0.033*
PAS	3.07±2.78	3.54 ±2.65	0.456
ASHA-NOMS	5.21 ±1.34	4.38 ±1.58	0.025*
FDS	23.39±17.07	28.67 ±12.98	0.111
PAHD	80.52±11.22	80.17 ±7.75	0.859

Abbreviations: MPT; Maximum Phonation Time, PAS; Penetration-Aspiration Scale, ASHA-NOMS; American Speech-Language Hearing Association National Outcome Measurement System Swallowing Scale, FDS; Functional Dysphagia Scale, PAHD; Parramatta Hospitals Assessment of Dysphagia, SD; standard deviation. , * : *p*-value <0.05

Table 2. Correlation with dysphagia evaluating value in supratentorial lesion patient

	Age	PAS	MPT	ASHA-NOMS	FDS	PAHD
Age		*r* = 0.343** *p* = 0.002	*r* = -0.441** *p* = 0.000	*r* = -0.264* *p* = 0.017	*r* = 0.334** *p* = 0.002	*r* = -0.024 *p* = 0.828
PAS			*r* = -0.775** *p* = 0.000	*r* = -0.0779** *p* = 0.000	*r* = 0.612** *p* = 0.000	*r* = -0.436** *p* = 0.000
MPT				*r* = 0.694** *p* = 0.000	*r* = -0.622** *p* = 0.000	*r* = -0.292** *p* = 0.008
ASHA-NOMS					*r* = -0.745** *p* = 0.000	*r* = 0.665** *p* = 0.000
FDS						*r* = -0.476** *p* = 0.000
PAHD						

Abbreviations: MPT; Maximum Phonation Time, PAS; Penetration-Aspiration Scale, ASHA-NOMS; American Speech-Language Hearing Association National Outcome Measurement System Swallowing Scale, FDS; Functional Dysphagia Scale, PAHD; Parramatta Hospitals Assessment of Dysphagia. ** : *p*-value <0.01, * : *p*-value <0.05

Table 3. Correlation with dysphagia evaluating value in infratentorial lesion patient

	Age	PAS	MPT	ASHA-NOMS	FDS	PAHD
Age		r = 0.0.60 p = 0.781	r = -0.166 p = 0.438	r = 0.009 p = 0.969	r = -0.177 p = 0.409	r = 0.063 p = 0.769
PAS			r = -0.893** p = 0.000	r = -0.794** p = 0.000	r = 0.306 p = 0.146	r = -0.167 p = 0.435
MPT				r = 0.684** p = 0.000	r = -0.457* p = 0.025	r = 0.212 p = 0.320
ASHA-NOMS					r = -0.375** p = 0.071	r = 0.215 p = 0.313
FDS						r = -0.287 p = 0.174
PAHD						