

뇌신경재활

게시일시 및 장소 : 10 월 18 일(금) 13:15-18:00 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 15:45-16:30 Room G(3F)

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Efficacy of thickened drinks evaluation during videofluoroscopic swallowing study

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Introduction

We propose efficacy of evaluating thickened drinks (IDDSI 2,3), the product that we have developed (Fig. 1) for better to diagnose of swallowing function and diet prescription.

Methods

Three hydrocolloid ingredients were used for enhancing viscosity: xanthan gum, guar gum, and modified starch. Information of our thickened beverage is listed at Table 1. Xanthan gum has synergistic effect with Galactomannan. Among the kinds of galactomannan, guar gum was used to improve the viscosity stability. In addition, modified starch is used resistant to harsh process conditions. Patients who get penetrated or aspirated on liquid diet but not in puree diet (Penetration-Aspiration Scale, PAS 1) were enrolled. They were administered with various viscosity of liquid after standard videofluoroscopic swallowing study (VFSS) test. Two types of liquid of the International Dysphagia Diet Standardization Initiative stage (IDDSI) 2 and 3 were given additionally for them. In our study, red been water as liquid is considered as IDDSI 0 and plain yogurt is considered as IDDSI 4.

Results

Patient demographics are described in Table 2. 62.50% of patients who were previously fed with Levine tube were able to drink liquid and 75% patients with puree diet were able to drink liquid (Table 3). 53.85% of patients who were newly prescribed with liquid or puree diet were able to drink liquid with this new method of VFSS with liquid of various step of IDDSI (Table 4). We were also able to reduce unnecessary risk of aspiration during liquid diet for who were eating semisolid or solid diet up to 71.43% with new prescription with liquid diet of IDDSI 2 or 3 (Table 5).

Discussion

Since dysphagia is becoming common disability with the growing number of old ages and survivors from various diseases such as stroke, traumatic brain injury and motor neuron disease, eating various types of food is important for patients' life quality. The limitation of the usual protocol of VFSS is that it lacks various viscosity of liquid and thus the prescription of types of liquid type can be limited. Patients sometimes complain about awful texture of food and about not knowing how to make exact viscosity of liquid we

prescribed for them. In addition, liquid intake with non-quantified food thickeners which is not unconfirmed during VFSS makes unnecessary aspiration and it is certainly blind spots of current protocol. Sufficient evaluation of viscosity of drink level and minimizing the gap between thin liquid (IDDSI 0) and puree (IDDSI 4) during prescription should be performed. Through our preliminary study, we could give fluid intake chance safely for some patients.

Conclusion

The newly introduced dysphagia test of this study offers patients chance to drink liquid and reduce risk of aspiration, thus improve liquid quality of patients with dysphagia.

Table 1. The information and viscosity of samples

Beverage	SampleID	Viscosity(cP)	NDD	Liquid remaining (mL)	IDDSI Level
Red bean water (Gubingdam (g/b/d), Ulsan, Korea)	RBW 0%	2.34-2.36	Thin	0.00 ± 0.0	Level 0
	RBW nectar	150-328	Nectar	5.47 ± 0.3	Level 2
	RBW honey	452-1208	Honey	9.20 ± 0.0	Level 3

cP, centipore; NDD, National Dysphagia Diet; IDDSI, International Dysphagia Diet Standardisation Initiative

Table 2. Patient demographics

Total		20	
Sex	Male	13	65%
	Female	7	35%
Age	<60	3	15%
	≥60	17	85%
Mean age	68		
Diagnosis	brain	11	55%
	cervical cord injury	0	0%
	Motor neuron disease	1	5%
	Parkinson's disease	3	15%
	Head & neck cancer	1	5%
	Old age	3	15%
	Other	1	5%
Mentality	Alert	17	85%
	Drowsy	3	15%
	Stupor	0	0%
	Semicoma	0	0%
	Coma	0	0%
tracheostomy	Yes	4	20%
	No	16	80%

Table 3. Rate of availability of liquid diet for patients with tubal feeding or puree diet

Previous diet	# of patients	Newly prescribed diet	# of patients	Liquid prescription	# of patients	
L-tube	8	L-tube	2	IDDSI 2	0	
				IDDSI 3	1	
		Puree	5	IDDSI 2	3	
				IDDSI 3	0	
		Semisolid	0	IDDSI 2	0	
				IDDSI 3	0	
		Solid	1	IDDSI 2	1	
				IDDSI 3	0	
# of patients with liquid-diet prescription					5	62.50%
Puree	4	L-tube	0	IDDSI 2	0	
				IDDSI 3	0	
		Puree	3	IDDSI 2	2	
				IDDSI 3	0	
		Semisolid	1	IDDSI 2	0	
				IDDSI 3	1	
		Solid	0	IDDSI 2	0	
				IDDSI 3	0	
# of patients with liquid-diet prescription					3	75.00%
Semisolid	4	L-tube	0	IDDSI 2	0	
				IDDSI 3	0	
		Puree	3	IDDSI 2	1	
				IDDSI 3	0	
		Semisolid	0	IDDSI 2	0	
				IDDSI 3	0	
		Solid	1	IDDSI 2	0	
				IDDSI 3	0	
# of patients with liquid-diet prescription					1	25.00%
Solid	4	L-tube	0	IDDSI 2	0	
				IDDSI 3	0	
		Puree	0	IDDSI 2	0	
				IDDSI 3	0	
		Semisolid	0	IDDSI 2	0	
				IDDSI 3	0	
		Solid	4	IDDSI 2	0	
				IDDSI 3	3	
# of patients with liquid-diet prescription					3	75.00%

#, number

Table 4. Rates of patients prescribed with liquid-diet while newly prescribed with tubal feeding or puree diet.

Newly prescribed diet	# of patients	IDDSI prescription	# of patients	
L-tube	2	IDDSI 2	0	0%
		IDDSI 3	1	50.00%
Puree	11	IDDSI 2	6	54.54%
		IDDSI 3	0	0%
# of patients with liquid-diet prescription			7	53.85%

#, number

Table 5. Rates of liquid-diet with various viscosity among patients newly prescribed with semisolid or solid diet

Newly prescribed diet	# of patients	IDDSI prescription	# of patients	
Semisolid	1	IDDSI 2	0	0%
		IDDSI 3	1	100.00%
Solid	6	IDDSI 2	1	16.67%
		IDDSI 3	3	50.00%
# of patients with liquid-diet prescription			5	71.43%

#, number