A VALIDATION STUDY OF THE FACIAL-ORAL TRACT THERAPY SWALLOWING ASSESSMENT OF SALIVA (F.O.T.T.-SAS)

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Objective

The objective was to investigate the concurrent validity and interrater reliability of F.O.T.T.-SAS in detection of aspiration risk, in patients with acquired brain injury (ABI) at a sub-acute inpatient neurorehabilitation centre.

Introduction

Facial-Oral Tract Therapy (F.O.T.T.) is an approach that provides both clinical assessment and treatment of oropharyngeal dysphagia.[1] In the F.O.T.T. approach, a prerequisite for the initiation of oral intake is safe swallowing of saliva.[1]

A recent randomized controlled trial showed that patients assessed for initiation of oral intake with the Facial-Oral Tract Therapy-Swallowing Assessment of Saliva (F.O.T.T.-SAS), were not more likely to develop aspiration pneumonia than patients who were assessed with an endoscopic evaluation.[2,3]

Methods

Data for concurrent validity (study 1) was gathered as part of the aforementioned randomized controlled trial.[2] Data for interrater reliability (study 2) was collected in an additional study. Informed or surrogate consent was obtained for all enrolled patients. Inclusion criteria were: ABI, ≥18 years of age, assessments made within 48 hours of admission, and Functional Oral Intake Scale score <7 at admission. Exclusion criteria were: tracheostomy tube and pneumonia at admission.

Swallowing Assessment of Saliva

The F.O.T.T.-SAS consists of a visual assessment of the oral structure, and a tactile assessment with swallowing of saliva, oral sensation and tone. Based on the assessment it is concluded whether oral intake can be initiated. Patients may be in sitting or reclined (due to reduced head control) position during assessment. At the present rehabilitation centre assessments of dysphagia are performed by Occupational Therapists (OT). The F.O.T.T.-SAS is part of a large assessment battery.[1] In conclusion,

Items	Yes	No
1) Conscious and/or respond to verbal address?		
2) Able to sit upright with some degree of head control?		
3) Oral transport of saliva?		
4) Spontaneous or facilitated swallowing of saliva?		
5) Coughing following swallowing of saliva?		
6) Gurgling breath sound following swallowing of saliva?		
7) Difficulties in breathing following swallowing of saliva?		
Based on the above questions, should oral intake be initiated? (Oral intake should be initiated if items 1–4=Yes and items 5–7=No)		

Study 1: Concurrent validity

Concurrent validity was investigated by having patients assessed with both F.O.T.T.-SAS and endoscopic evaluation within a 24-hour interval. We used sensitivity, specificity, and predictive values to establish the concurrent validity. A total of 43 patients were included. Subanalyses were carried out to investigate whether experienced and inexperienced OTs performed equally in the detection of aspiration risk.

Study 2: Interrater reliability

Interrater reliability was established by having patients assessed with F.O.T.T.-SAS by two OTs within a time limit of one hour between assessments. The second assessment was carried out blind to results from the first assessment. We used kappa-coefficients to establish the interrater reliability. A total of 33 patients were included.

Results

All patients in study 1 had either a percutaneous endoscopic gastrostomy or nasal tube at admission. In study 2, 10 patients had a percutanous endoscopic gastronomy tube, 16 patients had a nasal tube, and seven patients had no feeding tube at admission.

The results for study 1 are presented in Table 1. A total of 27 OTs carried out one or more of the 43 assessments.

Table 1. Study 1: Concurrent validity of F.O.T.T.-SAS with endoscopic evaluation as reference

	Stratified analysis		Overall precision
	Experienced occupational therapists (n=15)	Inexperienced occupational therapists (n=12)	
Patients†	28	14	43
True/false positive	5/3	5/1	10/4
True/false negative	19/1	8/0	28/1
Prevalence of aspiration	6 (21%)	5 (36%)	11 (26%)
Sensitivity	83% [36;100]	100% [48;100]	91% [59;100]
Specificity	86% [65;97]	89% [52;100]	88% [71;97]
Positive predictive value	63% [25;92]	83% [36;100]	71% [42;92]
Negative predictive value	95% [75;100]	100% [63;100]	97% [82;100]

Reported as mean, 95%CIs. Positive=Aspiration risk. † It was only possible to establish the experience level of occupational therapists for 42/43 clinical Assessments.

The results for study 2 are presented in Table 2. The prevalence of aspiration risk in the 33 patients was 33%. This calculated prevalence was based on conclusions from the second F.O.T.T.-SAS. All patients were in the same position at both assessments. A total of 18 patients were in an upright position during assessments and 15 patients were in a reclined position. A total of 13 OTs were involved in assessment of one or more patients.

Table 2. Study 2: Interrater reliability of the F.O.T.T.-SAS

Swallowing Assessment of Saliva	Agreement	Kappa	SE	p-value
1) Conscious and/or response to verbal address †	94%	…	…	…
2) Able to sit upright with some head control	97%	0.87	±0.17	p<0.001
3) Oral transport of saliva	88%	0.53	±0.17	p<0.001
4) Spontaneous or facilitated swallowing of saliva	91%	0.68	±0.16	p<0.001
5) Coughing following swallowing of saliva	94%	0.63	±0.17	p<0.001
6) Gurgling breath sound following swallowing of saliva	79%	0.30	±0.12	p<0.01
7) Difficulties breathing following swallowing of saliva	88%	0.43	±0.17	p<0.01
Overall agreement	94%	0.87	±0.17	p<0.001

Interrater reliability was established in 33 patients with acquired brain injury. † It was not possible to establish the kappa value because of a low prevalence of patients not being conscious and/or responding to verbal address.

Conclusion

F.O.T.T.-SAS is a simple, sensitive and reliable assessment for detecting aspiration risk in patients with ABI in sub-acute inpatient neurorehabilitation[4].

References

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