SWALLOWING ASSESSMENT IN CANCER LARYNX PATIENTS TREATED WITH RADIOTHERAPY OR CHEMORADIOTHERAPY

Rania Mohamed Abdou, Shady Hassan Mohamed Fadel,* Nesrine Hazem Hammouda, Asmaa Mustafa Ahmed Awad

Department of Otorhinolaryngology, Department of Clinical Oncology,* Faculty of Medicine, Alexandria University

Introduction

Radiation-associated dysphagia (RAD) refers to difficulty in swallowing resulting from head and neck radiotherapy or chemo-radiotherapy. It leads to impaired swallowing efficiency and safety and affects over 50% of patients. It is a significant concern in managing cancer larynx patients. Radiotherapy causes acute effects such as mucositis, airway edema, and neuropathy leading to aspiration. It also causes late effects such as xerostomia, fibrosis, chondritis, soft tissue necrosis, and stenosis. Oropharyngeal dysphagia diagnosis is established through screening and comprehensive assessment, including both instrumental and non-instrumental procedures. There are few cancer-specific tools available to quantify the precise physiological alterations in swallowing during HNC diagnosis and treatment. MASA-C (Mann Assessment of Swallowing Ability - Cancer version) is a comprehensive non-instrumental tool used by the clinician to assess swallowing ability. FEES (fiber-optic endoscopic evaluation of swallowing) is considered a gold standard instrumental tool for assessment of swallowing safety and efficiency.

Aim of the Work

To evaluate the accuracy of MASA-c; a non-instrumental swallowing assessment tool, in detecting aspiration compared to FEES; an instrumental swallowing assessment tool, in patients with laryngeal cancer after radiotherapy (RT) or chemoradiotherapy (CRT).

Patients and Methods

This study was conducted on 40 adult patients of both sex with cancer larynx post radiotherapy or chemo-radiotherapy.

a. Review of personal data, complaint, medical and present history.

b. Monitoring the signs and symptoms of dysphagia.

c. Administration of the MASA-C (Mann Assessment of Swallowing Ability – Cancer version), a structured, non-instrumental tool employed to evaluate swallowing function. The total maximum score is 200 points. Mean scores for dysphagia severity identified are as follows: Non-Significant (>183), Mild (173 - 183), Moderate (163 - 172), Severe (<163).

d. FEES was conducted by inserting a fiberoptic endoscope trans-nasally. Each patient was asked to swallow: 5 ml, 10 ml, 15 ml fluid, and solid colored by green edible food dye. we assessed the anatomy of the larynx and the safety of swallowing. This was done by using the Penetration-Aspiration Scale to detect aspiration.

Results

Table 1: Relation between MASA -C with Penetration Aspiration Scale (n = 40) [% From Total]

PAS	MASA-C								FET	p
	Non-Significant (n = 16)		Mild (n = 5)		Moderate (n = 5)		Severe (n = 14)			
	No.	%	No.	%	No.	%	No.	%		
Fluid										
No aspiration (1 – 5)	16	40.0	5	12.5	2	5.0	4	10.0	22.095*	<0.001*
Aspiration (6 – 8)	0	0.0	0	0.0	3	7.5	10	25.0		
Food										
No aspiration (1 – 5)	16	40.0	5	12.5	5	12.5	5	12.5	18.434*	<0.001*
Aspiration (6 – 8)	0	0.0	0	0.0	0	0.0	9	22.5		

Cases who aspirated in fluid had significantly lower MASA scores (mean: 134.3 vs. 180; p-value: <0.0001). A similar relationship was found regarding cases who aspirated in food (mean MASA score: 124.3 vs. 177; p-value: <00001).

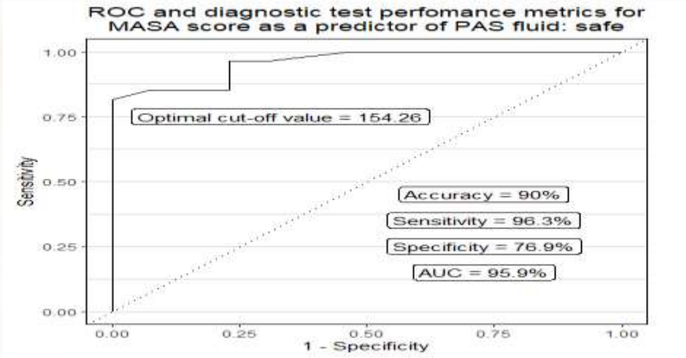

Figure 1: ROC curve showing predictive value and the association between MASA-c score and findings of PAS for fluid.

MASA-C score of 154.26 or higher is a good predictor of safe fluid swallowing with 96.3% sensitivity and 76.9% specificity.

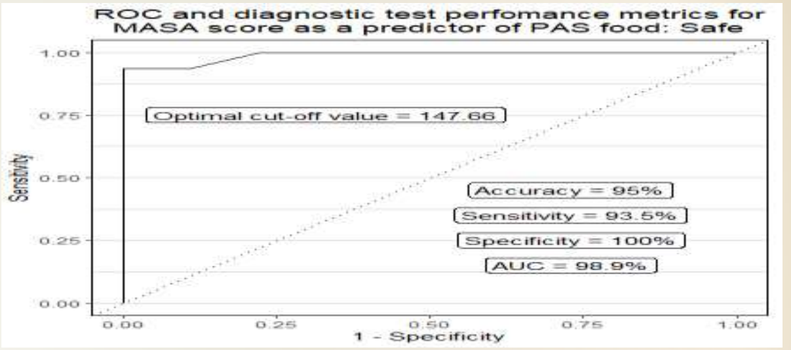

Figure 2: ROC curve showing predictive value and the association between MASA-c score and findings of PAS for food.

Conclusion

Our study highlighted that the MASA-C has proven to be very efficient in predicting the occurrence of swallowing difficulties and aspiration concerns in patients suffering from laryngeal cancer post-therapy (either RT or CRT). It is quick, easy-to-administer. Correlations between the total MASA-C scores and the outcomes of instrumental tools revealed that worse MASA-C scores were associated with higher risks of aspiration. The high sensitivity and specificity of MASA-C at different cut-off points which has a predictive value for the presence of aspiration, provide without a doubt the important value of non-instrumental assessment tools. However, non-instrumental assessments should be used as a "rule-in" strategy along with clinical judgment to ensure the most accurate identification of at-risk patients.