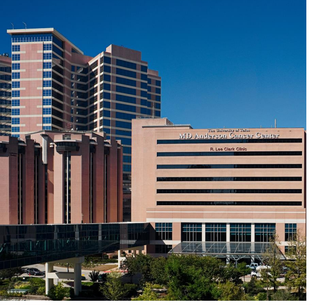

Determinants of Patient-Reported Dysphagia Among Oropharyngeal Cancer Survivors

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Background

Dysphagia, or difficulty swallowing, is commonly reported as a side effect by head and neck cancer (HNC) patients after surgery, radiotherapy (RT) or chemoradiotherapy.

About 30-50% of HNC patients report dysphagia when treated with aggressive non-surgical treatments.

Impaired swallowing, if prolonged, can cause a patient to experience detrimental effects on their quality of life (QoL) including anxiety in social settings and increased eating duration.

Certain risk factors, if recognized, can help in identification of patients, who will likely develop moderate to severe dysphagia after treatment, for supportive therapy.

Objective

To investigate various clinico-demographic risk factors associated with moderate to severe dysphagia

Methods

Study Population
880 oropharyngeal cancer (OPC) survivors treated at MD Anderson between Jan. 2000 – Dec. 2013

HNC Symptom Inventory
The MD Anderson Symptom Inventory for head and neck cancer (MDASI-HN)

Clinico-demographic risk factors
>15 chosen to investigate dysphagia

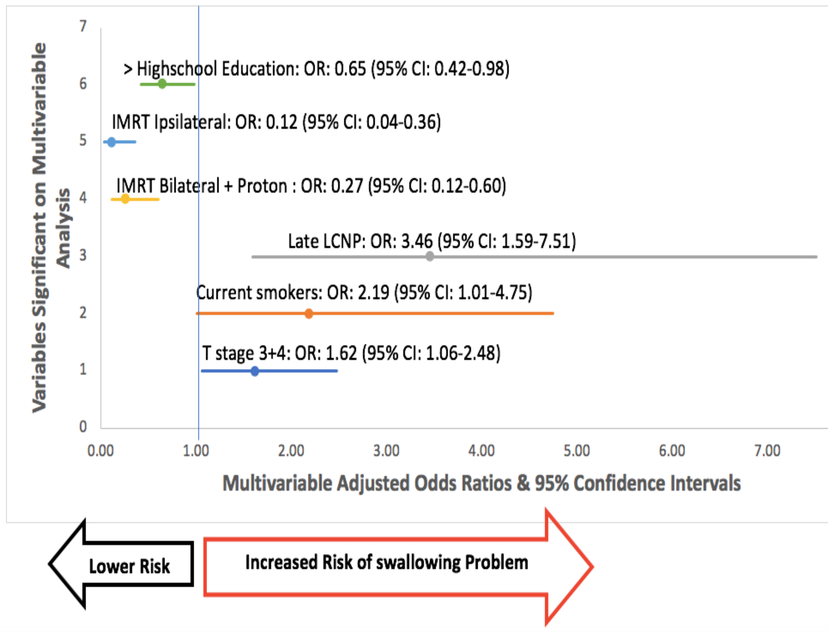
Statistical methods
Descriptive statistics & multivariable logistic regression

Results

Table 1: OPC Patient Characteristics, Clinical & Sociodemographic Variables & Swallowing Symptom Categories (N=880)

Variables	Swallowing symptom none to mild (N=672, 76.4%)	Swallowing symptom moderate to severe (N=208, 23.6%)	*P*
Age at diagnosis, median (range, IQR)	56 (32-84, 51-62)	56 (33-82, 51-63)	0.775
Survival time, yrs median (range, IQR)	7 (2-16, 4-10)	6 (1-16, 4-10)	0.111
Radiation Dose, Gy median (range)	69.2 (57-72, 66-70)	70.0 (40-72.6, 66-70)	<0.001
Sex			NA
Male	570 (76.3)	177 (23.7)	
Female	102 (76.7)	31 (23.3)	
Education			0.038
≤ Highschool	51 (30.9)	114 (69.1)	
>Highschool	136 (21.5)	497 (78.5)	
Primary Site			0.384
Tonsil	322 (78.5)	88 (21.5)	
Base of Tongue	321 (74.8)	108 (25.2)	
GPS	8 (80.0)	2 (20.0)	
T Stage			<0.001
1+2	537 (80.6)	129 (19.4)	
3+4	135 (63.1)	79 (36.9)	
N Stage			0.002
N0+N1+N2a+N2b	557 (78.7)	151 (21.3)	
N2c+N3	115 (66.9)	57 (33.1)	
HPV Status			0.490
Negative	44 (77.2)	13 (22.8)	
Positive	333 (78.0)	94 (22.0)	
Unknown	295 (74.5)	101 (28.5)	
Cigarettes Smoking			0.074
Never	320 (78.2)	89 (21.8)	
Former smokers at time of diagnosis	258 (77.3)	76 (22.7)	
Quit smoking subsequent to diagnosis	64 (70.3)	27 (29.7)	
Current smoker at survey	20 (58.8)	14 (41.2)	
Solid Food Pre-Treatment			0.492
Yes	664 (76.5)	204 (23.5)	
No	8 (66.7)	4 (33.3)	
Treatment Group			0.001
Single Modality	227 (83.8)	44 (16.2)	
Multimodality	445 (73.1)	164 (26.9)	
RT Schedule			0.003
Standard Fractionation	603 (77.7)	173 (22.3)	
Accelerated	61 (63.5)	35 (36.5)	
RT Type			<0.001
3D Conformal	21 (43.8)	27 (56.2)	
IMRT Bilateral (SF+WF+VMAT) + Proton	557 (76.3)	173 (23.7)	
IMRT Ipsilateral	86 (91.5)	8 (8.5)	
Late LCNP			<0.001
No	656 (77.7)	188 (22.3)	
Yes	16 (44.4)	20 (55.6)	

Figure 1. Risks Associated With Moderate to Severe Dysphagia (N=880)



Abbreviations: IMRT, intensity-modulated radiation therapy; SF, split-field; WF, whole-field; VMAT, volumetric modulated arc radiotherapy; RT, radiation therapy; LCNP, lower cranial neuropathy.

Conclusion

Patients who were current smokers at the time of the survey, had advanced tumor staging (T3 + T4), and those with late LCNP were associated with increased risk of moderate to severe dysphagia.

Patients with greater than high school education and who underwent treatment using IMRT bilateral or ipsilateral were associated with a decreased risk moderate to severe dysphagia post-treatment.

Smoking cessation is of paramount importance

Advanced tumor staging increases the risk of a patient developing moderate to severe dysphagia

Late LCNP surveillance & management is critical to alleviate dysphagia

Supportive patient interventions, such as swallowing exercises and continued assessment by speech pathologists are beneficial to HNC patients experiencing dysphagia

Patient prophylaxis can help decrease the burden of dysphagia

Preserving necessary swallowing structures and function is vital for improving QoL

Responsible Conduct of Research

The MD Anderson PI was responsible for maintaining documents and approvals for this research.

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References

1. Chaturvedi AK, Engels EA, Pfeiffer RM, et al. Human papillomavirus and rising oropharyngeal cancer incidence in the United States. *J Clin Oncol*. 2011;29(32):4294-4301. doi:10.1200/JCO.2011.36.4596
2. Johnson DE, Burtness B, Leemans CR, Lui VWY, Bauman JE, Grandis JR. Head and neck squamous cell carcinoma. *Nat Rev Dis Primers*. 2020;6(1):92. Published 2020 Nov 26. doi:10.1038/s41572-020-00224-3
3. Murphy BA, Deng J. Advances in Supportive Care for Late Effects of Head and Neck Cancer. *J Clin Oncol*. 2015;33(29):3314-3321. doi:10.1200/JCO.2015.61.3836
4. Epstein JB, Murphy BA. Late effects of cancer and cancer therapy on oral health and quality of life. *J Mass Dent Soc*. 2010;59(3):22-27.
5. "MD Anderson Symptom Inventory Head and Neck Cancer Module" https://www.mdanderson.org/research/departments-labs-institutes/departments-divisions/symptom-research/symptom-assessment-tools/md-anderson-symptom-inventory-head-and-neck-cancer-module.html.