Predictors of symptom burden in head and neck cancer treatment

University of Pittsburgh

UPMC | HILLMAN CANCER CENTER

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INTRODUCTION

Treatment for head and neck cancer squamous cell carcinoma (SCC) adversely impacts patient's short- and long-term quality of life; improved survival comes at a cost to the survivors' functional capacity and physical health.

Hypothesis: Symptoms throughout treatment will differ based on location of HNSCC, type of treatment, and social determinants of health.

METHODS

- The subjects in this study were recruited from the Department of Otolaryngology in the UPMC Eye and Ear Institute.

- Participants were diagnosed with primary, SCC of the paranasal sinuses, nasal cavity, oral cavity, tongue, salivary glands, nasopharynx, oropharynx, or larynx/hypopharynx between January 2020 and May 2022.

- During visits to the Hillman Cancer Center, patients were given the MDASI-Symptom Inventory[1] survey biweekly. We also collected demographic and clinical information from the medical records.

Statistical analysis: Linear regression was used to identify predictors of a high symptom burden defined by the mean of the five most severe symptoms at the end of treatment in this cohort of patients. Univariable and multivariable regression models were used to identify factors associated with high symptom burden while controlling for other confounders.

Table 1. Characteristics	N= 150(%)
Age	63.09 ± 10.17
Sex	Male: 114 (76.0)
	Female: 36 (24.0)
Site	Oral cavity: 34 (22.7)
	Oropharynx: 72 (48.0)
	Larynx/Hypopharynx: 29 (19.3)
	Other: 15 (10.0)
Stage	Early I/II: 72 (48.0)
	Advanced III/IV: 78 (52.0)
Radiation + Chemotherapy	Chemo + RT: 91 (60.7)
	RT only: 59 (39.3)
Radiation Dose	64.25 [60.00, 70.00]
Education	Highschool: 52 (34.7)
	Some College/Associates Degree: 33 (22.0)
	Bachelors Degree: 34 (22.7)
	Graduate Degree: 23 (15.3)

RESULTS

Top five most severe symptoms: Mucus in Mouth or Throat, Problems tasting food, Dry Mouth, Lack of Appetite, Pain
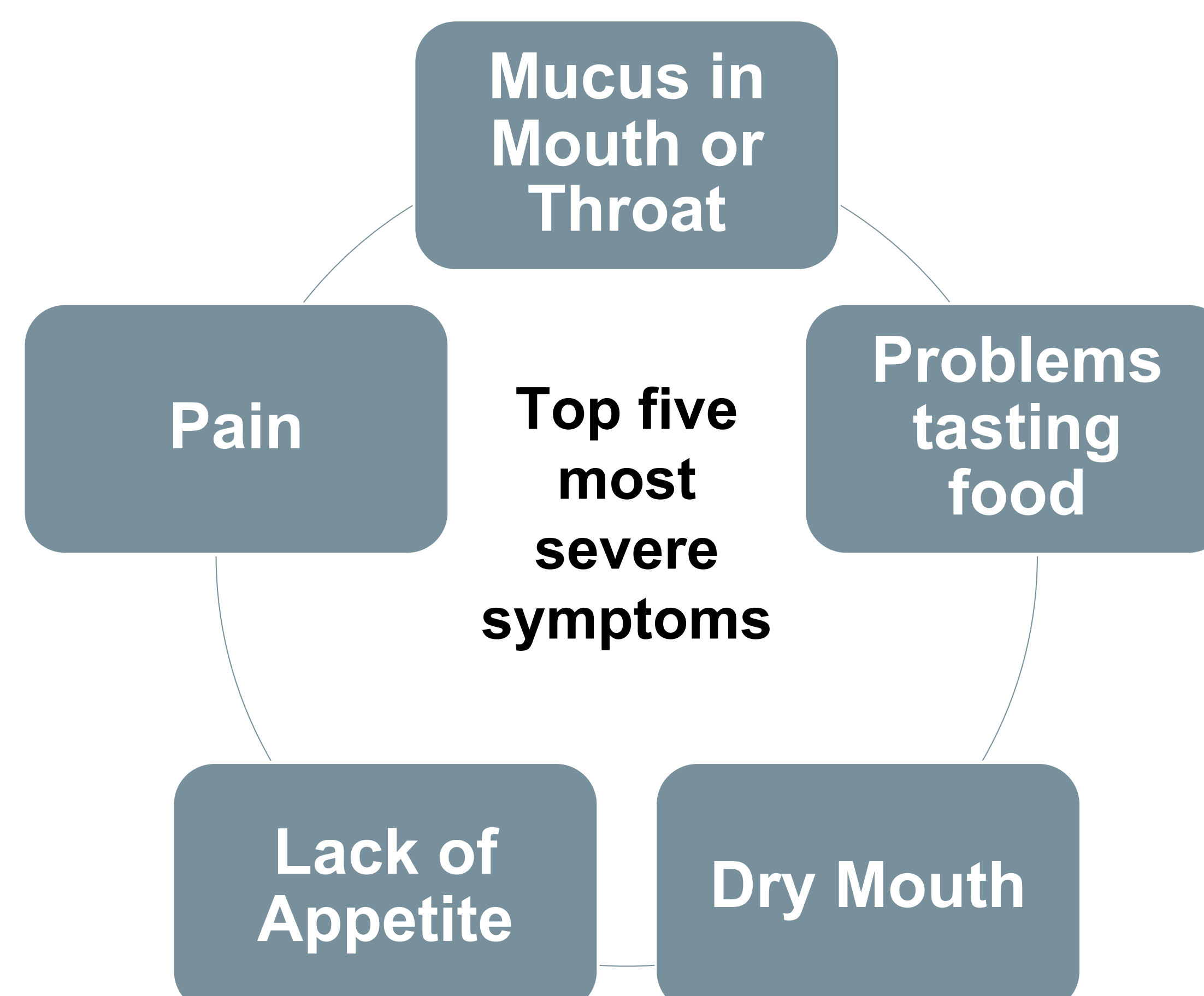
Figure 1 (above) Description of the five most severe symptoms at the end of treatment in this cohort of patients (N=150).

Table 2 (below) Univariate analysis of the significant predictors of high symptom burden. Symptom burden was measured as a mean of the five most severe symptoms, mean of all symptoms, and the mean change of symptoms from the first treatment visit to the last.

Univariate Analysis	Category	Beta	95% CI	P value
Mean of Five Most Severe Symptoms				
Tumor Location in Oropharynx	Categorical	0.80	0.02, 1.6	0.044
Education of bachelor's degree+	Categorical	0.81	-0.01, 1.6	0.053
Chemotherapy + Radiation	Categorical	0.86	0.06, 1.7	0.035
Mean of All Symptoms				
Chemotherapy + Radiation	Categorical	0.71	0.05, 1.4	0.034
Mean Change of Symptoms				
Education of bachelor's degree+	Categorical	0.86	0.09, 1.6	0.028

Predictors of high symptom burden include tumor location in the oropharynx; education of bachelor's degree or higher; and undergoing chemotherapy in addition to radiation.

DISCUSSION

- In each of the measures of high symptom burden, a consistent trend was observed: tumor tumor location in the oropharynx; education of bachelor's degree or higher; and undergoing chemotherapy in addition to radiation, were associated with higher symptom burden.

- The other variables analyzed— sex, marital status, income, difficulty paying for basic needs, and tumor stage— were not found to be significant predictors of high symptom burden.

Further Directions:

➢ As data collection and analysis continues, additional variables will be evaluated as potential predictors. These additional variables include but are not limited to health literacy and feeding tube use.

➢ We also will look at predictors of high symptom burden in head and neck cancer specific symptoms in comparison to general MDASI reported symptoms

➢ We will also build multivariable regression models to study the effect of predictor variables while controlling for other confounders.

CONCLUSIONS

- In patients diagnosed with head and neck SCC, there are detectable variables that can be identified pre-treatment, specifically tumor location, education, and type of treatment, which predict patients are at risk for a higher symptom burden during treatment.

- It is critical that care teams identify patients with these risk factors so that they can be better prepared to manage these life-threatening symptom burdens; ultimately, this will aid in reducing the additional psychological and financial stressors of ER visits and hospital admissions during treatment.

REFERENCES

1. Rosenthal DI, Mendoza TR, Chambers MS, Asper JA, Gning I, Kies MS, Weber RS, Lewin JS, Garden AS, Ang KK, S Wang X, Cleeland CS, Measuring head and neck cancer symptom burden: the development and validation of the M. D. Anderson symptom inventory, head and neck module. Head Neck. 2007 Oct;29(10):923-31