

Can the G8 Objectively Identify HNC SBRT Candidates?

Christina Mallouk^a, Adam Mutsaers MD^b, Mohammed Aldohan^b, Ahmed Abugharib MD^b, Irene Karam MD^b, Andrew Bayley MD^b, Liying Zhang PhD^b, Madette Galapin MRT(T)^b, Kevin Higgins MD^c, Danny Enepekides MD^c, Ian Poon MD^b, Antoine Eskander MD SCM^c
^aUniversity of Ottawa Faculty of Medicine, University of Ottawa, Ottawa, Canada ^bDepartment of Radiation Oncology, University of Toronto, Toronto, Canada ^cDepartment of Otolaryngology, University of Toronto, Toronto, Canada

INTRODUCTION & PURPOSE

Stereotactic body radiotherapy (SBRT) has been increasingly utilized in head and neck cancer (HNC) for patients who have been identified as unfit for conventional, radical treatment using subjective physician assessment and holistic multidisciplinary discussions¹. An objective measurement involving a combination of TNM staging and the use of the validated oncologic Geriatric 8 (G8) scale is hypothesized to be useful in standardizing the process by which patients are deemed unfit for radical treatment and therefore are considered candidates for SBRT.

MATERIALS & METHODS

- This retrospective analysis included patients with squamous cell carcinoma (SCC) of the HN.
- Patient factors including age, BMI, degree of weight loss, food intake, etc. were abstracted retrospectively from electronic medical records to formulate a G8 score for each patient.
- This value, along with the TNM stage, was analyzed against a validated cut-off to classify the patient as UNFIT (UF) or FIT (F)
 - (UF when G8 <11 if T0-3 and/or N0-2 OR ≤14 if T4 and/or N3).
- The number of UF and F patients were then quantified and compared against the number of subjectively unfit patients as a measure of accuracy.
- The demographics and clinical characteristics of the UF and F groups were also compared using Wilcoxon rank-sum nonparametric test and Fisher's exact test.
- To search for significant predictive factors related to the binary outcome of UF vs. F, a multivariate logistic regression model was performed using variables such as gender, M stage, primary tumour site (PS), maximum tumour diameter (MD), radiation dose, year of last fraction, and the presence of symptoms, caregivers, and recent hospitalizations.

Demographic Summary:

- One hundred eighteen patients with a median age of 85 (54-102), a median radiation dose of 45 Gy (30-50 Gy), and a median maximum tumour diameter of 40 mm (4-100 mm).
- Eighty-two of the patients (69.5%) had an M-stage of M0, 24 (20.3%) an M-stage of MX, and 11 (9.3%) an M-stage of M1.
- PSs included skin (35.6%), oral cavity (28.0%), nodal (22.0%), and pharynx (11.0%).
- Eighty-one (68.6%) patients were classified as UF and 37 (31.4%) as F.

Data Analysis:

- On multivariate analysis, MD was found to be significantly positively correlated to the outcome of UF vs. F (p=0.0196).
- PS was also found to be significantly correlated to the outcome (p=0.0140), with oral cavity tumours having a stronger correlation than skin, pharynx, or nodal tumours.

Table 2. Predictive factors related to UNFIT/FIT using multivariate logistic regression

Multivariate Model					
(Outcome: UNFIT vs. FIT)	p-value	OR	95% CI of OR	R ² (%)	
Max Diameter (continuous)	0.0196	1.040	1.006	1.075	25.87%
Site (overall effect)	0.0140				
Nasal cavity vs. Skin	0.5073	0.4591	0.0460	4.5843	
Neck vs. Skin	0.1081	0.4490	0.1691	1.1925	
Oral cavity vs. Skin	0.0019	10.4687	2.3738	46.1684	
Pharynx vs. Skin	0.9358	0.9519	0.2870	3.1569	
Nasal Cavity vs. Pharynx	0.6416	0.4823	0.0224	10.3970	
Neck vs. Pharynx	0.3206	0.4717	0.1071	2.0778	
Oral Cavity vs. Pharynx	0.0231	10.9975	1.3905	86.9788	
Nasal Cavity vs. Oral Cavity	0.0611	0.0439	0.0016	1.1572	
			6		
Oral Cavity vs. Neck	0.0009	23.3161	3.6376	149.5	
Nasal Cavity vs. Neck	0.9881	1.0225	0.0542	19.3031	

RESULTS

Table 1. Demographic and clinical characteristics of all patients

Age (years)		Site		Max diameter n	
>85	59 (50.00%)	Nasal	2 (1.69%)	Mean ± SD	107
80-85	26 (22.03%)	Cavity		Median (Q1, Q3)	40.8 ± 16.9
<80	33 (27.97%)	Neck	26 (22.03%)	Range	40 (30, 50)
Gender		Oral Cavity	33 (27.97%)	Year of last fraction	4, 100
		Pharynx	13 (11.02%)		
Male	81 (68.64%)	Skin	42 (35.59%)		2011 1 (0.85%)
Female	37 (31.36%)	Unknown	2 (1.69%)		2012 4 (3.39%)
M Stage		Primary			2013 4 (3.39%)
		Rx dose			2014 4 (3.39%)
Not available	1 (0.85%)	n	118		2015 16 (13.56%)
M0	82 (69.49%)	Mean ± SD	4355.9 ± 334.0		2016 16 (13.56%)
M1	11 (9.32%)	Median	4500 (4000,		2017 22 (18.64%)
MX	24 (20.34%)	(Q1, Q3)	4500)		2018 21 (17.80%)
Symptomatic		Range	3000, 5000		2019 18 (15.25%)
		Distribution			2020 12 (10.17%)
No	8 (6.78%)	3000	1 (0.85%)	Total G8 Score	
Yes	110 (93.22%)	3500	2 (1.69%)	n	118
Caregiver		4000	36 (30.51%)	Mean ± SD	10.7 ± 2.2
		4500	70 (59.32%)	Median (Q1,	11 (10, 13)
Recent hospitalization		5000	9 (7.63%)	Q3)	
				Range	5, 15
No	91 (77.12%)			Fit/Unfit	
Yes	27 (22.88%)			Fit	37 (31.36%)
				Unfit	81 (68.64%)

CONCLUSIONS

The majority of subjectively unfit patients were categorized as UF with the G8 scale, suggesting that this method may be an accurate objective measure, although variables such as MD and PS seem to significantly affect this result and should be considered both in future studies and when evaluating patients for SBRT consideration.

REFERENCES

¹Ivan Walree, et al. J Geriatr Oncol. (2019)