The Laryngoscope

Quality of Life of Oligometastatic and Polymetastatic Head and Neck Squamous Cell Carcinoma Patients

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Objective: Evidence suggests that distant metastasis in head and neck squamous cell carcinoma is a spectrum of disease. Previous studies show that oligometastasis has favorable survival compared with polymetastasis. The quality of life of patients with oligometastasis remains unknown. To further solidify the position of oligometastasis as a separate entity, we hypothesized that oligometastatic patients experience better quality of life than polymetastatic patients.

Methods: Patients with distant metastasis were stratified into three groups: oligometastasis (≤3 metastatic foci in ≤2 anatomic sites), explosive metastasis (≥4 metastatic foci at one anatomic site), and explosive-disseminating metastasis (spread to ≥3 anatomic sites). Quality of life was assessed every 2 months post distant metastasis diagnosis.

Results: Between January 1, 2016, and December 31, 2021, a total of 161 patients with distant metastasis were identified, with a total of 397 measurements. In this group, 57 (35.4%) patients had oligometastasis, 35 (21.7%) patients had explosive metastasis, and 69 (42.9%) patients had explosive-disseminating metastasis. Their median post-distant metastasis survivals were 8.5 months, 3.2 months, and 3.2 months respectively ($p < 0.001$). A significantly better overall quality of life was observed in the oligometastasis group compared with the polymetastatic groups (+0.75 out of 7, $p < 0.05$). Furthermore, oligometastatic patients performed better in the subdomains of "physical functioning," "fatigue," and "pain."

Conclusion: Results from this study underscore that subgroups exist regarding quality of life and survival within distant metastasis, with polymetastatic patients performing worse than oligometastatic patients. This highlights the significance of tailored interventions that consider the unique challenges faced by each metastatic group of patients.

Key Words: distant metastasis, head and neck carcinoma, oligometastasis, polymetastasis, quality of life.

Level of Evidence: 3, retrospective cohort study

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INTRODUCTION

Every year, 850,000 cases of head and neck cancer (HNC) are diagnosed worldwide,[1] with distant metastasis (DM) developing in 10%–24% of the cases.[2–4] Hellman and Weichselbaum suggested in 1995 that DM should not be regarded as a binary phenomenon (DM do or do not exist), but rather as a spectrum of disease, in which gradations of DM can be defined.[5] There is growing evidence that this theory can also be applied to head and neck squamous cell carcinoma (HNSCC).[6–8] Sinha et al. created a classification system of DM categories for p16-positive oropharyngeal squamous cell carcinoma.[7] In their study, three categories of DM were defined, ranging from limited disease (oligometastasis) to more extensive spread (explosive or disseminating metastasis), showing that oligometastasis yields better survival rates than explosive or disseminating metastasis.[7]

In our previous study,[8] we assessed whether the hypothesis of Hellman and Weichselbaum applied to all subsites in HNSCC. Using a modified form of the existing classification system of Sinha et al.,[7] we determined that three distinct categories of DM can indeed be identified for survival in HNSCC, with oligometastasis (OM) resulting in the best survival rates, followed by explosive metastasis (EM) and explosive-disseminating metastasis (EDM).

In addition to survival, HNC can disproportionally impact quality of life (QoL). Impairments include difficulties in vital functions, such as swallowing, speaking, and breathing.[9] In addition, systemic symptoms such as fatigue, pain, and weakness are also present in more than three-quarters of the patients.[10] Despite the introduction of OM in HNSCC more than a decade ago,[11] its effect on QoL in comparison with more extensive spread still remains ill-defined in the literature.

To further solidify the position of OM as a separate entity within the distant metastatic spectrum of disease, we hypothesize that the QoL of patients with OM is more favorable than those with an EM or EDM pattern. The primary aim of this study is therefore to assess the QoL

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for the three distinct categories of DM in patients with HNSCC.

Furthermore, 18F-fluorodeoxyglucose positron emission tomography (FDG-PET) has been established to be valuable in the work up of HNC.[12] In distant metastatic disease, the limited number of DM foci detected on conventional imaging may be an underrepresentation of the true extent of disease, as morphological changes on conventional imaging are preceded by metabolic changes on FDG-PET.[13] The secondary aim of this study is therefore to reevaluate the survival of the three DM categories in a cohort that underwent more frequent use of FDG-PET in the follow-up.

MATERIALS AND METHODS

Patient and Data Selection

This retrospective study was approved by the Erasmus Medical Center ethics committee (MEC-2020-0314).

All patients diagnosed between January 1, 2016, until December 31, 2021, with HNSCC DM and available Healthcare Monitor (HM) data were included in this study. Since 2005, an Expert Center of Palliative Care for patients with HNC is operational in the Erasmus Medical Center with specialized oncology nurses as case managers.[14] The HM is an electronic patient-reported outcome-based clinical support system,[15,16] with results from this system used to guide individual patient interactions throughout their trajectory. DM was determined through radiological imaging, cytological and histological sampling, or clinical examination when applicable. Loss of heterozygosity analyses were performed if uncertainty existed whether a focus constituted a second primary tumor or a distant metastatic lesion. Patients were excluded in case of synchronous non-HNSCC, except when the distant metastatic foci were pathologically proven to have derived from the HNSCC.

Endpoints and Definitions

The primary endpoint was QoL using the EORTC QLQ-C15-PAL in relation to patterns of DM. The EORTC QLQ-C15-PAL is a shortened 15-item questionnaire based on the EORTC QLQ-C30, assessing physical and emotional functioning in the palliative phase of care.[17] The first 14 items assess physical and emotional functioning on a scale of 1 (no impairment at all) to 4 (severe impairment), whereas on the last item, the patient is asked to rate their overall QoL for the past week on a scale of 1 (very poor) to 7 (excellent). A higher score indicates a better QoL for the domains of emotional functioning, physical functioning, and global health status. For the remaining domains, a lower score indicates better QoL. Patients completed QoL questionnaires every 2 months online or at every outpatient clinic visit.

As defined in our previous study[8] and based on a classification proposed by Sinha et al.,[7] patterns of DM were divided into three categories. In this classification, OM constituted ≤3 metastatic foci in ≤2 anatomic sites and EM was defined as ≥4 metastatic foci at one anatomic site. The remainder of the patterns were defined as EDM, constituting spread to ≥3 anatomic sites or >3 metastatic foci in 2 anatomic sites. Using this subdivision, skeletal metastases were considered to be distinct anatomic sites in case of spread to separate bones.

The date of DM diagnosis was defined as the date on which the patient was informed of the palliative diagnosis. The pattern of DM was recorded as found at the time of DM diagnosis.

Workup and Management

In the workup of primary HNC, guidelines at our center indicated a CT scan of the thorax to exclude the possibility of DM to the lungs. In the recent years, FDG-PET CT scans have gradually replaced other diagnostic modalities as the sole and primary diagnostic modality. Following treatment, FDG-PET CT scans or CT scans of the thorax and abdomen were performed when applicable in case of possible recurrent disease. Radiological imaging of other anatomical sites was only performed in case of clinical symptoms.

Treatment for distant metastatic HNSCC was solely offered with a palliative intent, in which the primary aim was alleviation of symptoms. Palliative treatment consisted of systemic therapy (chemotherapy or immunotherapy) or radiotherapy to focal metastatic lesions.

Statistical Analysis

Statistical analyses were conducted using SPSS (IBM SPSS Statistics, version 28.0.1.0) and R version 4.1.2 with the JointAI package. The mixed-effects model framework with three natural cubic splines was used to investigate the longitudinal trajectories

TABLE I.
Baseline Characteristics of the Included Patient Population.

Characteristic		No. (%)
Gender	Male	127 (78.9)
	Female	34 (21.1)
Mean age at DM detection in years ± SD		66.4 ± 9.9
Index site	Oropharynx	49 (30.4)
	Hypopharynx	33 (20.5)
	Oral cavity	32 (19.9)
	Supraglottic	17 (10.6)
	Unknown primary	9 (5.6)
	Glottic	8 (5.0)
	Skin	5 (3.1)
	Nasopharynx	4 (2.5)
	Nasal cavity and paranasal sinuses	4 (2.5)
Chronology of DM	Synchronous with index tumor	36 (22.4)
	DM as 1st recurrence	81 (50.3)
	DM as 2nd recurrence	36 (22.4)
	DM as 3rd recurrence	8 (5.0)
Index tumor recurrence at time of DM	No recurrence	70 (56.0)
	Local	15 (12.0)
	Regional	22 (17.6)
	Locoregional	18 (14.4)
Treatment of metastatic foci	No treatment	104 (64.6)
	Local therapy (surgery or radiotherapy)	19 (11.8)
	Systemic therapy	27 (16.8)
	Local and systemic therapy	11 (6.8)
Pattern of DM	Oligometastasis	57 (35.4)
	Explosive	35 (21.7)
	Explosive-disseminating	69 (42.9)

DM = distant metastasis; SD = standard deviation.

of QoL over time between the different patterns of DM and other clinical parameters. Using this framework, correlation in repeated measurements in patient-reported outcome measures (PROMs) over time from the same person is accounted for. Random patient factor was used to account for within-patient correlations, whereas a random intercept was added to account for different baseline levels of the patients. Covariates consisting of time, pattern of DM, and treatment were added. QoL outcomes were analyzed for significance and clinical relevance was considered using minimal clinically important differences (MCIDs).[18] Post-DM disease-specific survival (DSS) was estimated using the Kaplan–Meier estimator. Heterogeneity between groups was assessed using the chi-squared test and Fisher's exact test when appropriate. Two-tailed significance levels of ≤5% were used for all analyses. For frequencies and proportions, descriptive statistics were used.

RESULTS

A total of 161 patients developed DM in the period between January 1, 2016, and December 31, 2021. Seven patients (4.3%) had synchronous non-HNSCC, of whom five were localized in the lung. In all seven cases, loss of heterogeneity analyses determined the metastatic lesions to have derived from the HNSCC. Two patients (1.2%) had a second primary in the head and neck region. The median and mean post-DM DSS for all 161 patients was 4.7 months (IQR 1.9–9.8) and 10.0 months (95% CI 7.9–12.2), respectively, with a two-year survival of 15.0%.

The majority of the patients developed an EDM pattern (42.9%), followed by an OM and EM pattern (35.4% and 21.7% respectively, Table I). The OM group showed the most favorable survival as opposed to the polymetastatic groups, with a median post-DM DSS of 8.5 (IQR 5.1–26.6) months. The EM and EDM showed comparable survivals with a median post-DM DSS of 3.2 (IQR 1.3–7.8) months and 3.2 (IQR 1.5–6.1) months, respectively (Fig. 1). In the OM and EDM groups, PET-CT was the most frequently used diagnostic modality as opposed to the EM group, nevertheless no significance was reached (Table II, $p = 0.14$).

Quality of Life Analysis

Linear mixed-model analysis on longitudinal patient-reported QoL up to 12 months was performed, with EM and EDM combined set as reference category. In total, 397 measurements were collected and analyzed. A significant difference in intercept in favor of patients with OM on all EORTC QLQ-C15-PAL domains (Table III, $p < 0.001$) was observed. In addition to intercept, patients with OM show significantly better QoL on the domains "global health status," "physical functioning," "fatigue," and "pain" ($p < 0.05$). Despite the different rates of treatment between the two groups, patients with OM remained showing more favorable QoL. In the "global health status" domain with EM and EDM combined set as reference category, a QoL of 4.64 out of 7 is observed at diagnosis. Compared with OM, a QoL of +0.75 out of 7 is measured over the whole course of the follow-up in favor of OM. A physical functioning of +20.8% in the OM group over the polymetastatic group is observed ($p < 0.001$). In addition, less fatigue and pain are observed in the OM group (−11.7% and − 14.4% respectively, $p < 0.05$).

Plotting of the domain "global health status" showed initial quick deterioration in both groups over the course of 2 months, followed by slight improvement and stabilization of the experienced QoL. Nevertheless, in the later course of the follow-up, further deterioration was observed in both groups (Fig. 2).

No significant differences existed in dietitian consultation, pain management team consultation, or gastric tube placement between the three DM categories. The most common intervention was palliative sedation in all three DM categories, with the most frequent place of death being at home.

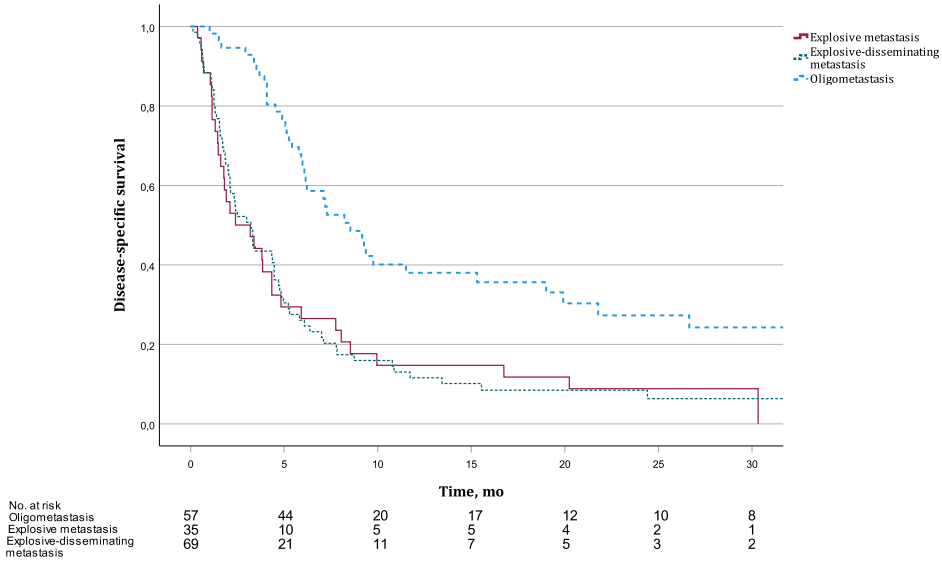

Fig. 1. Kaplan–Meier curve of post-distant metastasis disease-specific survival by distant metastasis pattern (log-rank test, $p < 0.001$).

TABLE II.
Patient and Palliative Care Characteristics Per Pattern of Distant Metastasis.

Variable	OM, $N = 57$ No. (%)	EM, $N = 35$ No. (%)	EDM, $N = 69$ No. (%)	p-Value
Dietitian consultation				0.99
Yes	40 (70.2)	25 (71.4)	49 (71.0)	
No	17 (29.8)	10 (28.6)	20 (29.0)	
Pain management team consultation				.13
Yes	6 (10.5)	2 (5.7)	13 (18.8)	
No	51 (89.5)	33 (94.3)	56 (81.2)	
Gastric tube placement				.75
Yes	8 (14.0)	7 (20.0)	12 (17.4)	
No	49 (86.0)	28 (80.0)	57 (82.6)	
Direct cause of death				0.45
No sedative intervention	14 (32.6)	8 (25.8)	21 (34.4)	
Palliative sedation	21 (48.8)	17 (54.8)	29 (47.5)	
Euthanasia	3 (7.0)	5 (16.1)	9 (14.8)	
Blowout	5 (11.6)	1 (3.2)	2 (3.3)	
Location of death				0.24
At home	33 (75.0)	26 (81.3)	44 (67.7)	
Hospice	6 (13.6)	2 (6.3)	15 (23.1)	
Hospital	3 (6.8)	4 (12.5)	3 (4.6)	
Nursing home	2 (4.5)	0 (0.0)	3 (4.6)	
Mean weight loss in kilograms ± SD				**0.04**
in the past 6 months	2.2 ± 3.2	3.9 ± 4.8	4.2 ± 5.3	
WHO status				0.15
WHO 0	14 (24.6)	6 (17.1)	5 (7.2)	
WHO 1	21 (36.8)	16 (45.7)	32 (46.4)	
WHO 2	17 (29.8)	7 (20.0)	22 (31.9)	
WHO 3 and 4	5 (8.8)	6 (17.1)	10 (14.5)	
Diagnostic modality				0.14
PET-CT	25 (43.9)	7 (20.0)	35 (50.7)	
CT chest	9 (15.8)	9 (25.7)	13 (18.8)	
CT neck and chest	11 (19.3)	11 (31.4)	7 (10.1)	
CT chest and abdomen	6 (10.5)	3 (8.6)	5 (7.2)	
CT neck, chest, and abdomen	2 (3.5)	2 (5.7)	6 (8.7)	
Other	4 (7.0)	3 (8.6)	3 (4.3)	
Treatment of metastatic foci				**0.01**
No treatment	29 (50.9)	32 (91.4)	43 (62.3)	
Local therapy	9 (15.8)	1 (2.9)	9 (13.0)	
Systemic therapy	15 (26.3)	0 (0.0)	12 (17.4)	
Local and systemic therapy	4 (7.0)	2 (5.7)	5 (7.2)	

Note: Significant p-values are indicated by bold print. EDM = explosive-disseminating metastasis; EM = explosive metastasis; OM = oligometastasis; SD = standard deviation.

Treatment of metastatic foci differed significantly between the three groups, with 91.4% of all EM patients abstaining from palliative treatment, compared with 50.9% and 62.3% in the OM and EDM groups, respectively (Table II, $p = 0.01$).

DISCUSSION

In this study, we observed that oligometastatic patients experience better QoL over the whole course of their disease than patients with a polymetastatic pattern. In addition, in this cohort, a more favorable survival was again seen in patients with OM compared with patients with EM or EDM. These results have clinical implications in daily practice, as more accurate prognostic information can be provided to patients with DM. Although the palliative phase is short, with a median post-DM DSS of 4.7 months, patients with a polymetastatic pattern are distinguished by an even more limited survival and poor QoL. This leaves a shorter period of time in which palliative care can be optimized in comparison with oligometastatic patients. Results from the linear mixed-model analysis can aid in increasing

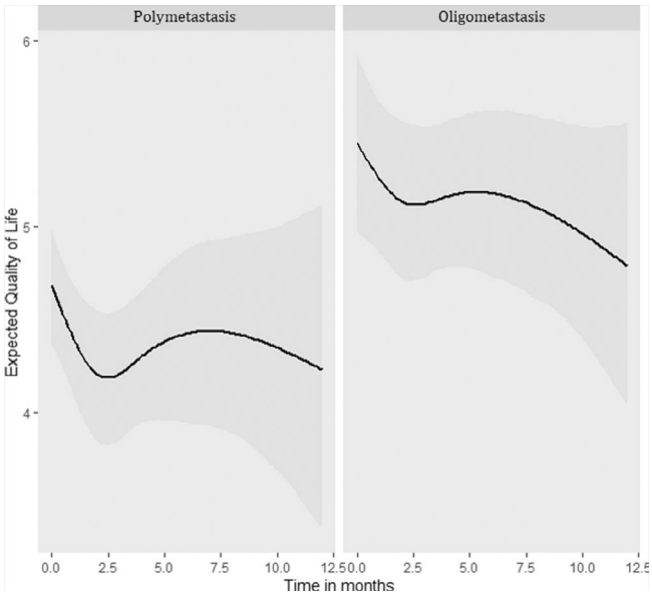

Fig. 2. Predicted global health status by distant metastasis pattern with "time," "pattern of distant metastasis," and "treatment" included as factors (linear mixed model, $p < 0.001$).

non-antitumor interventions for the more vulnerable polymetastatic group. Patients with a polymetastatic pattern experience more pain during the entire course of the palliative phase, with early consultation of the pain management team being an example of an intervention, which could improve the QoL of this group. In addition, increasing the frequency of consultations with specialized oncology care nurses and transferring more concise information regarding prognosis to the patient's primary care physician are steps that can be taken to strengthen the position of the polymetastatic group. By tailoring interventions to address the unique challenges faced by polymetastatic patients, we aim to contribute to an improved holistic care framework that goes beyond traditional antitumor treatments.

The position of patients with OM is also subject to change, as the prolonged survival and favorable physical functioning permit more aggressive palliative therapies. This study endorses recent studies showing patients with OM treated successfully with curative intent.[19,20] In the past, chemotherapy had been the standard systemic therapeutic option in distant metastatic HNSCC patients, with the aim of prolonging survival and symptom alleviation.[21] Nevertheless, chemotherapy-induced toxicities are well-known adverse events in patients with DM,[22] causing the decision for treatment to be a delicate balance between its efficacy and side effects. The novel immunotherapeutic agents are known to increase survival in palliative HNSCC[23]; however, it remains unknown how this affects the QoL in patients with prolonged survival. Therefore, although the physical functioning of patients with OM allows for treatment intensification, its effect on QoL and the risk of adverse events should always be taken into consideration.

In our previous study with patients in the period from 2006 until 2013, median post-DM DSS of 4.7, 4.1, and 1.7 months were observed in the OM, EM, and EDM

TABLE III.
Linear mixed-model analysis of the EORTC QLQ-C15-PAL domains with explosive metastasis combined with explosive-disseminating metastasis set as reference category.

EORTC QLQ-C15-PAL domains	Mean (SD)	*p*-Value
Global health status		
Intercept	4.64 (0.17)	**<0.001**
Pattern of DM (OM)	0.75 (0.30)	**0.01**
Time	1.20 (0.51)	**<0.001**
Treatment	0.15 (0.23)	0.52
Physical functioning		
Intercept	56.25 (3.25)	**<0.001**
Pattern of DM (OM)	20.80 (5.39)	**<0.001**
Time	16.83 (8.44)	**<0.001**
Treatment	7.38 (4.36)	0.09
Emotional functioning		
Intercept	69.27 (3.25)	**<0.001**
Pattern of DM (OM)	4.82 (5.91)	0.38
Time	24.87 (6.95)	**<0.001**
Treatment	0.58 (4.55)	0.93
Fatigue		
Intercept	41.20 (3.26)	**<0.001**
Pattern of DM (OM)	−11.68 (5.54)	**0.03**
Time	6.24 (4.99)	**<0.001**
Treatment	−6.75 (4.33)	0.11
Pain		
Intercept	38.15 (3.32)	**<0.001**
Pattern of DM (OM)	−14.41 (5.69)	**0.02**
Time	0.75 (1.55)	0.79
Treatment	−3.12 (4.55)	0.49
Dyspnea		
Intercept	26.85 (3.12)	**<0.001**
Pattern of DM (OM)	−6.39 (5.19)	0.25
Time	2.17 (0.73)	0.25
Treatment	−6.76 (4.58)	0.17
Nausea and vomiting		
Intercept	7.52 (1.71)	**<0.001**
Pattern of DM (OM)	−4.46 (3.11)	0.15
Time	1.90 (1.20)	**0.04**
Treatment	−2.58 (1.86)	0.16
Insomnia		
Intercept	33.82 (4.03)	**<0.001**
Pattern of DM (OM)	−7.48 (5.60)	0.18
Time	−0.48 (1.27)	0.69
Treatment	−3.70 (4.47)	0.42
Appetite loss		
Intercept	30.17 (3.83)	**<0.001**
Pattern of DM (OM)	−7.09 (6.48)	0.25
Time	−0.10 (3.13)	0.67
Treatment	−10.32 (4.69)	**0.01**
Constipation		
Intercept	18.92 (3.04)	**<0.001**
Pattern of DM (OM)	−9.90 (5.22)	0.05
Time	1.37 (1.39)	0.60
Treatment	2.08 (3.99)	0.63

Note: Significant *p*-values are indicated by bold print. In the context of this linear mixed-model analysis, "intercept" marks the starting point of the two groups, "Patterns of DM" denotes the difference in quality of life over the whole course of the two groups, "Time" portrays the effect of time on the quality of life (i.e., the quality of life worsens over time), and "Treatment" portrays the effect of treatment as a potential confounder on the quality of life of the patients.
OM = oligometastasis; SD = standard deviation.

groups, respectively.[8] In this series, the median post-DM DSS of OM and EDM patients has substantially increased, whereas a less optimistic survival was found in the EM patients (3.2 months). A possible explanation for the increased survival rates is the use of novel immunotherapeutic agents,[24,25] reflected in low systemic therapy rates in the EM group. The question that arises here concerns the cause for the low treatment rates in the EM category. The EM category was in previous studies identified as a middle category, with a distinct survival from the EDM category.[7,8] In patients with EM, unwillingness may exist on one hand for systemic treatment due to the relatively limited metastatic spread confined to merely one anatomic location. On the other hand, stereotactic radiation therapy may be deemed unfeasible due to the extensive number of foci within that anatomic location.

Nevertheless, survival of HNSCC patients is often overestimated in the palliative phase,[26] possibly leading to suboptimal use of palliative and end-of-life care. A vital part of implementing shared decision-making consists of, among others, providing accurate and unbiased information about (1) prognosis, (2) treatment options, and (3) pros and cons of each relevant option.[27,28] The first step can be achieved through personalized prognostic modeling for palliative patients, which can assist physicians in estimating survival more accurately. For this, multiple facets that predict prognosis should be taken into account, including the patterns of DM.[29] The bottleneck exists in the second and third parts, in which a research gap exists in the treatment options and its impact on survival and QoL for the different patterns of DM. Therefore, information is needed on how treatment decisions are made by physicians and patients and what weighs into these decisions.

FDG-PET Imaging

The use of FDG-PET imaging has been established as an essential component of the workup of HNC,[30–32] but consensus is lacking regarding its role in the follow-up.[33] In our cohort, FDG-PET CT imaging was increasingly used in the follow-up, constituting the most common imaging modality. The clinical significance of this is that OM diagnosed with FDG-PET imaging can be considered true oligometastatic disease, whereas those diagnosed with conventional methods may have DM foci outside imaged areas. Nevertheless, when comparing the rates of the different patterns of DM, similar rates are found to our previous cohort, where FDG-PET imaging did not constitute a routine part of the workup and follow-up.[8] Due to the fact that morphological changes on conventional imaging are preceded by metabolic changes on FDG-PET,[13] the question arises whether this leads to a higher rate of synchronous DM over metachronous DM. In our previous cohort, synchronous and metachronous DM as first recurrence accounted for 16.4% and 60.8% of the total DM cases, respectively. When comparing this with the current cohort, a shift to more synchronous than metachronous DM is observed (22.4% and 50.3% respectively).[8]

Identification and Prediction of Metastatic Patterns

Currently, the question remains whether OM constitutes an indolent biological state with a distinct tumor environment, or a small clinically apparent tumor burden in the presence of more aggressive occult metastatic disease.[34] The identification of OM in a patient as a separate clinical entity is essential for its subsequent management.

The determination of biomarkers could constitute a valuable part in the workup of distant metastatic disease for the correct and early identification of oligometastatic disease.

Study Strengths and Limitations

This study paves the way for individualized counseling regarding prognosis and QoL in patients with DM. Prognostic information on QoL gained from this study will aid in the shared decision-making process, as patients in the palliative phase prefer more extensive information on prognosis than those in the curative phase.[35] To our knowledge, it is the first study in oncology in which PROMs are used in relation to patterns of DM, further solidifying the position of OM as a separate entity within the distant metastatic spectrum of disease. At our center, a prognostic model for palliative HNSCC patients is under development to estimate overall survival. Insights from this study allow the addition of distant metastatic patterns as a prognosticator for survival, while also paving the way for the development of a prognostic model for QoL in the palliative phase. Another major strength is the frequent use of FDG-PET imaging in this cohort, ensuring diagnostic certainty for OM.

However, one limitation of this study derives from the general evolving definition of OM. In this cohort, OM was defined according to criteria modified from Sinha et al,[7] whereas different definitions are reported in the literature, ranging from 1 to 5 metastatic foci.[36] As of now, it remains unclear what number of metastatic foci and affected anatomic locations can still be regarded as oligometastatic disease. Another limitation stems from the choice of abstaining from treatment in the majority of the patients. The diagnosis of OM may allow potential eradication of metastatic foci, with novel therapies, such as immune checkpoint inhibitors, altering disease progression and affecting both survival and QoL. As of now, it is unknown how such a prolonged survival with therapies without serious adverse events impacts QoL in patients with metastatic HNSCC. Results from our patient population may therefore not represent patient populations in countries with higher treatment rates of DM.

CONCLUSION

Our study demonstrated that oligometastasis is associated with better QoL compared with polymetastatic disease. Patients with OM show favorable QoL on all EORTC QLQ-C15-PAL domains at diagnosis compared with polymetastatic patients. In addition to the differences at baseline, the QoL remains better over the course of the whole follow-up for the domains "global health status,"

"physical functioning," "fatigue," and "pain." The results from this study can aid in providing more accurate information on survival and QoL in patients with DM.

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