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Original Article

Stage at Presentation and Associated Factors for Late Diagnosis of Head and Neck Malignancies at Bugando Medical Centre Tanzania

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ABSTRACT

Head and neck cancer is among the most common cancers with an increase in number worldwide. It has a management challenge due to late-stage presentation. Its epidemiology and characteristics are changing from anatomical to biological due to its viral etiological. This study was done to determine the presentation and factors of head and neck malignancies at Bugando Medical Centre Tanzania. This was an analytical cross-section prospective study involving all patients confirmed to have head and neck malignancy at Bugando Medical Centre from February to June 2019. A total number of 60 patients (M: F=1.4:1) were studied. The median age was 56 years. The associated factors were the symptoms ranging from 1 to 104 weeks at the first consultation, Late-stage observed among patients coming from the rural areas by 58.3% and those using local medicine at 70%. Low level of education, which was primary education, was leading 51.7%. Those who attended the dispensary for their first consultation had an advanced stage of disease at presentation. It showed that the dispensary was the preferred centre for the first consultation of the majority at 41%. The major of patients presented at an advanced stage which was 73% and the contributory factor of delayed presentation of head and neck cancer at Bugando Medical Centre was attributed by patients themselves, whereas health care had a small contribution. The main reasons observed were rural settlement, local medication, and low level of education. Training must be conducted at health care providers in dispensaries and health centres on how to suspect patients with HNC at an early stage and refer them directly to tertiary hospitals without passing through a series of referrals.

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INTRODUCTION

Cancers of the upper aerodigestive tract, collectively known as head and neck cancers (HNC), arise from a multiplicity of sites (1, 2). Head and neck cancer includes cancer of the upper aerodigestive tract (including oral cavity, oralpharynx, nasopharynx, hypopharynx, larynx), paranasal sinuses and salivary glands (3). They rank sixth among the most common cancers worldwide. In 2002, the World Health Organization estimated 600,000 new cases of Head and Neck.

The most important prognostic factor in head and neck cancer is the stage of the disease at presentation. Early cancer has a better prognosis following treatment (4). Therefore, public enlightenment, early diagnosis, and effective, cost-effective treatment and follow-up are urgently needed to improve the outcomes of these patients in our environment (5)

Poverty, illiteracy, advanced-stage presentation, lack of access to health care, and poor treatment infrastructure pose a major challenge in the management of these cancers. The annual GDP (gross domestic product) spent on health care is very low in developing countries compared to developed countries (6). A large proportion of patients with cancer of the head and neck present with advanced disease, and this proportion has increased in the past twenty years (7). The reason for a patient to be diagnosed with advanced disease can be due to the patient's delay in seeking medical care, misdiagnosis by the GP or dentist in primary care who needs to refer the patient, or mismanagement in diagnosing and treating the patient once she/he attends the hospital (7). A cross-sectional study on head and neck cancers showed that various beliefs of patients (such as "it is ill-fated to have cancer", "cancer is a curse"), non-availability of transport, ignoring the trivial ulcers in the mouth and believing them to be self-limiting, and prolonged treatment resulting in family stress are important factors in treatment delay (6). The number of healthcare institutions dedicated to cancer care is woefully inadequate when compared with Western countries (6).

Head and neck cancers are not uncommon at Bugando Medical Centre and show a trend towards a relatively young age at diagnosis, and the majority of patients present late with advanced-stage cancer (5). It is found that at least one new patient in a week visits Bugando Medical Centre with head and neck cancer where the majority are at an advanced or late stage of the disease. This may be attributed to low education, poverty, delayed diagnosis, or wrong treatment at primary health care. This study aims to find out the stage of disease at presentation at Bugando Medical Centre and the factor that made the patient present at that stage.

METHODOLOGY

Study Design

This is an analytical cross-sectional prospective study involving all patients admitted or attending outpatient clinics and confirmed to have head and neck cancer at Bugando Medical Centre from February to June 2019.

Study Setting

The study was conducted at ENT and Dental clinic and E9 ward of Bugando Medical Centre (BMC). BMC is found in Mwanza City in Northwestern Tanzania along the shore of Lake Victoria. It is one of the four tertiary referral hospitals in the country and serves as a teaching hospital for CUHAS and other paramedics. It has a bed capacity of 900 and provides services to

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approximately 16 million people, mainly from northwest Tanzania from the last 2012. BMC ENT department is one of the surgical departments with 5 specialists and 6 residents, while the dental department has 3 general dental doctors and one oral and maxillofacial surgeon. Both ENT and dental departments share one ward E9 ward. They provide comprehensive OPD consultations and various surgical care where operated patients are admitted in the E9 ward, and a few may be admitted in AICU depending on their need, like mechanical ventilators.

Study Population

This includes all patients of all age groups and genders with histological confirmed to have cancer of the head and neck attending or admitted at Bugando Medical Centre in the departments of otorhinolaryngology and dental over a period of study. In a pilot study, an average of two to three new patients with head and cancer were attending the Otorhnolaryngology department, and at least one patient attended dental (oral maxillofacial surgery) department.

Selection Criteria

Inclusion Criteria

- All patients of all age groups and genders confirmed by histology to have cancer of the head and neck attended or admitted to the departments of ENT and Dental at Bugando Medical Centre over a period of study.
- Patients who requested and consented to the study (consent from relatives, patients or legally authorised person). There were 62 patients enrolled; 1 died before consent and was excluded from the study, and 1 initially refused, then accepted to participate and consented.

Exclusion Criteria

- Unconscious patients without next of kin to consent for the study
- Patients whose primary tumours could not be assessed
- Unstageable tumours
- Metastatic from none head and neck (secondary tumour to the head and neck region)
- Patients unable to afford CT scan for completion of staging

Study Variables

Independent (Predictor) Variables

- Patients' bio-data, age, and gender
- Patients' education level
- Patients' occupation
- Level of health facility attended
- Subsite of the primary tumour
- Family history of cancer
- Pathological diagnosis of the malignancies
- Any alternative/traditional health care before presenting to the hospital.
- Time taken from first hospital visit to first referral to tertiary hospital.
- Number of hospitals/health facilities referred (number of referrals).

Dependent Variables

- Disease at presentation.

Recruitment of Patients

Recruitment of patients to participate in the study was done in the ENT-HNS and dental departments by the Principal investigator, assisted by research assistants. Patients were screened for inclusion criteria, and those who met the inclusion criteria were enrolled into the study after agreeing to the informed consent.

Clinical staging was done by taking history, performing a physical examination, and conducting a radiological investigation. Primary tumour size was assessed by physical examination during routine examination for direct accessible

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tumours. For those tumours which were not indirectly accessible, like laryngeal tumours and nasopharyngeal tumours, were assessed using nasopharyngoscopy or during surgery (examination under anaesthesia) for taking a biopsy. Lymph node size was assessed during routine examination by palpating the regional level of nodes draining the respective area involved. Additional staging was done during radiological evaluation using CT scans, X-rays, and ultrasound. Histopathology was used to confirm the diagnosis of malignancy.

Data Collection

Data were collected using a pre-coded structured questionnaire

Statistical Data Analysis

Statistical data were analysed using STATA version 13.0. P-values were computed for categorical variables using Chi–square ($\chi 2$) test and Fisher's exact test depending on the size of the data set. Independent student t-tests were used for continuous variables. A p-value of less than 0.05 was considered to constitute a statistically significant difference.

Study Limitations

Lack of PET scan for assessment of micro-metastasis.

Recall bias: some patients could not remember the exact duration of symptoms and the level of health care facility attended at peripheral.

Ethical Issues

Permission was sought from the head of the department of Otorhinolaryngology. The patient's refusal to consent or withdraw from the study did not alter or jeopardise their access to medical care. The approval to carry out the study was sought from the Joint CUHAS/BMC Research, Ethics, and Publication committee

In this study, patients signed a written informed consent form. For patients who were unconscious or under the age of 18 years, the informant (parent for under 18 years or legally authorised person for those above 18 but uncancerous) signed on his/her behalf.

Patients were assured that the information collected was maintained under strict confidentiality.

The study did not interfere with the decision of the attending doctor.

RESULTS

Patients Demographic

During the period of study, a total number of 61 patients with malignant head and neck diseases were enrolled. One patient was excluded from the study because she died before consenting. So, 60 patients were available for final analysis. Among the 60 patients enrolled, males were 35(58.33%), and females were 25(41.67%), making male: female = 1.4:1. The mean age was 56 years and ranged from 12 to 89 years. A total number of 35(58.33%) patients were from rural areas, and 25(41.67%) were from urban areas. Primary school education occupied the majority 31(51.67%) of patients, 17(28.33%) had no formal education, 10(16.67%) had secondary education and 2(3.33%) patients were university graduates.

The Presenting Stage of Head and Neck Cancer

The majority of patients 29(48.33%), presented with stage three while stages 2 and 4 had equal number of 15(25%) each. Stage 1 had only one patient who had a tumour of the oral cavity. This makes 44(73.33%) of all patients presented with late-stage (stage III and IV) HNC at presentation, while 16(26.67%) presented with early-stage (stage I and II). These findings showed that the late stage of HNC had more patients than an early stage. Among patients with advanced stage, 10 presented with distant metastasis, while the rest had no metastasis.

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Table 1: Demographical distribution of the study population

Patients Characteristics		Frequency	Percent (%)
Gender	Male	35	58.33
	Female	25	42.67
	Total	60	100
Age group	10 - 19	2	3.33
	20 - 29	3	5
	30 - 39	6	10
	40 - 49	5	8.33
	50 – 59	14	23.33
	60 – 69	16	26.67
	70 – 79	9	15
	80 - 89	5	8.33
	Total	60	100
Residence	Rural	35	58.33
	Urban	25	41.67
	Total	60	100
Education level	No formal education	17	28.33
	Primary school	31	51.67
	Secondary school	10	16.67
	University	2	3.33
	Total	60	100

Table 2: Stage of head and neck cancer

Patients' characteristics		Number of patients	Percent (%)
Stage presented	I	1	1.67
	II	15	25
	III	29	48.33
	IV	15	25
Stage group	Early stage	16	26.67
	Late stage	44	73.33
	Total	60	100
Distant metastasis status	With metastasis	10	16.67
	Without metastasis	50	83.33
	Total	60	100

Patients Related Factors in Presentation of Head and Neck Cancer

Patients from rural areas presented with late disease stage 29(65.91%) as compared to those from urban areas. This may show a significant association between rural settlement and late-stage presentation of HNC. From the study, a large number of patients 42 patients (70%) have used traditional 36(81.82%) of all patients from both urban and rural with a late stage presentation are those who used traditional medicine as compared to 8(18.18%) who did not use local medicine (p=0.001). These findings show that the use of local medicine among patients with HNC was associated with the late stage of HNC presentation at BMC.

A larger number of patients had a higher level of education than the rest of groups 31(51.67%). There was a large number of patients with advanced stage among patients with primary education, 25 (52.82%) than patients with other levels of education. This suggests that patients with lower levels of education were associated with late-stage presentations of head and neck cancer.

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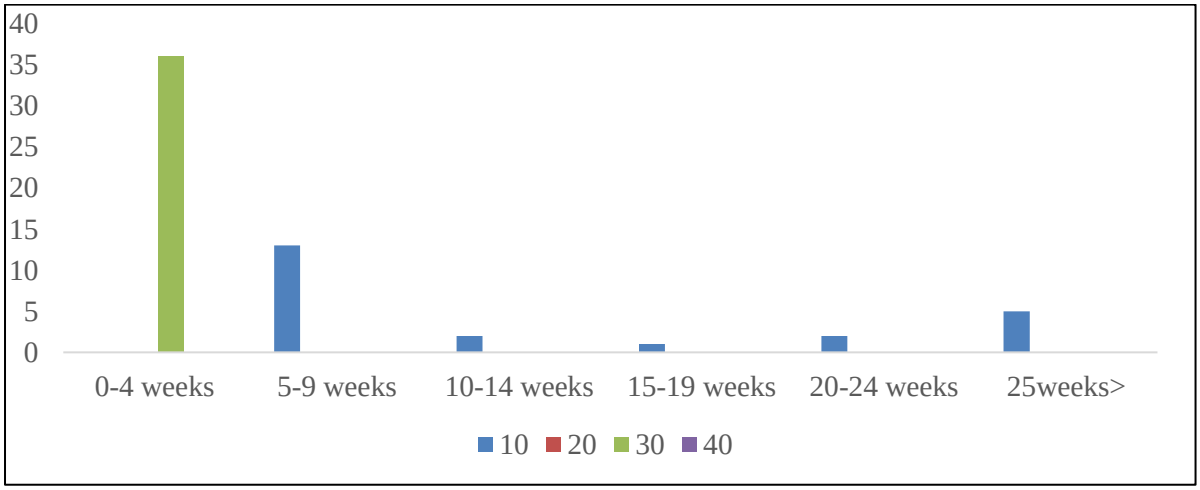
Table 3: Demographical data associated with delay of Head and Neck Malignant

Patient characteristics		Head and neck cancer stage		p-value
		Early stage	Late stage	
Age group	10 -19	1 (6.25)	1 (6.25)	0.860
	20 – 29	0 (0.00)	3 (6.82)	
	30 – 39	1 (6.25)	5 (11.36)	
	40 – 49	1 (6.25)	4 (9.09)	
	50 – 59	4 (25.0)	10 (22.73)	
	60 – 69	6 (37.50)	10 (22.73)	
	70 – 79	2 (12.50)	7 (15.91)	
	80 – 89	1 6 (25.0)	4 (9.09)	
Area of residence	Rural	6 (37.50)	29 (65.91)	0.048
	Urban	10 (62.50)	15 (34.1)	
	Alternative medicine	6 (37.50)	36 (81.82)	0.001
	No alternative medicine	10 (62.50)	8 (18.18)	
Education level	No formal education	4 (25)	13 (29.55)	0.062
	Primary school	6 (37)	25 (56. 82)	
	Secondary school	6 (37)	4 (9.09)	
	University/college	0 (00)	2 (4.55)	
	Total	16 (100)	44(100)	
Sex	Male	8 (50.00)	27 (61.36)	0.430
	Female	8 (50.00)	17 (38.64)	

Duration of Symptoms before Hospital Consultation

Hospital consultation ranged between 1 week to more than 104 weeks from the start of symptoms. Most patients (36) had their first consultation within 4 weeks of symptoms. However one patient delayed up to 2 years before visiting health care while on local medication.

Figure 1: Duration of Symptoms before Hospital Consultation



Health Care Related Factors in Delay Presentation of Head and Neck Malignant

Most patients visited dispensary 25(41%) as their first healthcare facility to seek treatment. This was followed by the hospital level, which comprised of the district hospital, regional hospital, and BMC. Patient with the first visit to the dispensary presented with late stage 19 (43.18%) than those who consulted higher levels of health care for their first time, 14 (31.82%) for hospital level and 11 (25.00%) for health centre

From the study, 31 patients have 2 numbers of referrals, 13 have only one referral, and 16 have more than two referrals. It shows that, with an

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increase number of referrals, the number of patients presenting with late stage also increases. *Table 4* below shows patients with late-stage; 22.75% had 1 number of referrals, 47.73% had two referrals, and 29.55% had more than two referrals.

Table 4: Health care related to late presentation of head and neck cancer

Health care characteristics		Stage at presentation		P-value
		Early stage	Late stage	
Level of first health care visited	dispensary	6 (37.50)	19 (43.18)	
	Health centre	5 (31.25)	11 (25)	0.876
	hospital	5 (31.25)	14 (31.82)	
	Total	16 (100)	44 (100)	
Level of health care patient referred from	Dispensary	0 (0.00)	1 (2.27)	
	Health centre	2 (12.50)	2 (4.55)	
	District hospital	4 (25.00)	15 (34.09)	
	Regional hospital	10 (62.50)	26 (59.09)	
	Total	14 (100)	44 (100)	
Number of referrals	1	3 (18.75)	10 (22.75)	
	2	10 (62.50)	21 (47.73)	0.579
	More than 2	3 (18.75)	13 (29.55)	
	Total	16 (100)	44 (100)	

DISCUSSION

Head and neck cancers are cancers occurring worldwide, and their incidence is increasing in size, especially in developing countries. Currently, the trend is changing from old age to young age due to changes in lifestyle and viral infections. The majority of patients present with an advanced stage that poses challenges during management. This study was done to assess the presentation and associated factors for late diagnosis of head and neck malignancies in our setting.

In this study, the median age at presentation was 56 years. This is in keeping with other studies done in Africa and outside Africa (2, 5,10). Males were affected more than women, with a ratio of men: women being 1.4:1. This is also in keeping with other studies (2, 5); however, in this study, the ratio of male: female was big compared to other previous studies, which indicate that the number of females is on the rise (11)

Nearly two thirds of patients (73.3%) presented with a late stage diagnosis in our centre. This shows that diagnosis of head and neck cancer is still a challenge as late stage poses a challenge in management; this was found in previous studies (8,10). Of the patients presenting with late-stage, rural residents contributed 65.9% of the patients while urban population contributed 34.1% of all patients with late-stage at diagnosis. This has the same result as that done in western Uganda and by Gilyoma et al. (5,10). The late stage of presentation may be due to poor healthcare facilities, and lack of professional doctors to diagnose and refer earlier for timely management in rural areas, which occupy the majority of the population in this study. Urban areas kept many hospitals with professional specialists making more people diagnosed at first visit.

In this study, patients using traditional medicine presented with an advanced (81.82%) stage compared to those not using them, who contributed 62.5% of early stage (p-value of 0.001); the same trend was seen in a study done in western Uganda (10). During an interview, it was found that most of the patients not using traditional medicine were those Christians who claimed to be saved, and the majority of this group were those coming from urban areas rather than rural areas.

In this study, majority of patients had a primary level of education, followed by those without formal education, and few had tertiary education. This is consistent with other studies from Kenyatta Hospital and western Uganda (4,10). A

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large number of patients with advanced disease had no formal education, and those with a primary level of education by 29.55% and 56.89%, respectively (p-value of 0.06). Though the difference is marginal (p=0.06), it could likely be more significant in a large sample size. Patients with secondary school education and university constituted few cases presented with advanced disease. With the increasing level of education, the number of advanced cases of head and neck cancer can also be reduced. However, in this study, there were only two patients with university education. All patients presented with late stage; one of them was diagnosed at an early stage and refused treatment and came back after some time with an already advanced stage of the disease.

Based on sex distribution, there was no difference among males and females based on the stage in this population. There were 8 males and 8 female,s each contributing to 50% of patients presenting with early stages of the disease (stage I and II). Other studies did not find a difference in stage presented among males and females with head and neck cancer (2, 5, 6,9); however, some studies show women have more delayed presentation (late stage) than men (12).

Duration of symptoms ranged from 1 week to 101 weeks before the first health care consultation. This is more similar to other studies done at Kenyatta National Hospital, Mbarara Uganda and Muhimbili National Hospital where patients delayed visiting health facilities within equal intervals (4, 5,10), despite the fact that 60% had the first consultation at a health care facility within 4 weeks, a large number presented at our centre with advanced stage. This may be due to the majority being treated medically in the peripheral health facilities for wrong diagnosis.

A total of 25 (41%) patients preferred visiting the dispensary at their first consultations, likely due to limited access to higher levels and the national referral system. The same findings were seen in the study done at Kenyatta Hospital (4). For patients who presented with late stage, the majority (43%) were those who visited the dispensary at their first consultation. The majority of patients passed through at least one referral to several referrals before coming to BMC. Those who went through one referral and several referrals had no difference in terms of stage presented at our Centre (13). This was quite different from the studies done in Kenya and Uganda (4,10). This may be attributed to those looking for traditional medical care that presented to health care with advanced disease and referred to BMC directly for obvious disease. Those who had many referrals have been treated for no specific symptoms with the wrong diagnosis until the disease is advanced. Whether the patient first visited the dispensary level or hospital level, there were no differences in stage presentation at our centre. A large number of patients were referred from the regional hospital level (36), followed by the district hospital (19) and health centre (4) and only one from the dispensary level. The regional hospital has the majority of patients presented with early stage (62.5%) as compared to other levels. May this be because patients must pass through regional hospital (referral hospitals) for being referred to our Centre (consultant hospital).

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study found that, like in other areas, head and neck cancer is still a problem in our setting. This is because the majority of patients (73.33%) presented with advanced stage, and the trend is on the rise among women. Patient-associated factors were rural settlement, use of traditional medicine, and low education level, while healthcare factors were consulting the dispensary at first time and a number of referrals given to the patient.

Recommendations

Training must be conducted at health care providers in dispensaries and health centres on how to suspect patients with HNC at an early stage and refer them directly to tertiary hospitals without passing through a series of referrals. Patients' sensitisation/ education to increase awareness of HNC. Early reporting to health care facility once having any swelling in the body, and

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establish pathology and oncology treatment centre to the referral hospitals.

CONFLICT OF INTEREST

Authors declare no conflict of interest

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Contributorship

OMK: Writing the manuscript, literature review and discussion

AD: Conceptualisation, data collection and discussion of the results

OO: Conceptualization and discussion of the results

FM: Conceptualization and discussing of the results

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