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Stages of delay in oral cancer care evaluated at a tertiary health centre.

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Abstract

Background: To examine the stages of delay in presentation and management of oral cancer patients at University College Hospital Ibadan and compare findings with previous studies.

Methods: A 20-year retrospective analysis of the delay stages among oral cancer patients that utilized patient's biodata and clinical data.

Result: 169 oral cancer cases consisting of 127 carcinomas, 25 sarcomas and 17 lymphomas were analyzed. There was significant difference in the mean evolution time (ET) according to histological type (oral carcinoma = 282.8±414, oral sarcomas = 219.2±247.3 and oral lymphomas 105.5±115 days; p = 0.001). Patient's delay was more than professional delay for all cancer types (65.9%, 59.1% and 60.1% for carcinomas, sarcomas and lymphomas respectively). There was a significant difference in the mean ET of the early stage cancers compared with the late stage cancers (mean = 137.2±99 and 266.4±355; p = 0.010).

Conclusion: A combination of patients and professional delay negatively influenced the management of oral cancer patients but the patient's delay formed the bulk of this combination in our center.

Keywords: *Oral cancer, delay, management*

Résumé

Contexte: Examiner les étapes du retard dans la présentation et le traitement des patients atteints de cancer de bouche au centre hospitalier universitaire d'Ibadan et comparer les résultats des études précédentes.

Méthodes: Une rétrospective des analyses de plus 20 années passées des étages du retard chez les patients atteints du cancer de bouche en à l'aide des données biographiques du patient et celles des cliniques.

Résultat: 169 cas de cancer de la bouche constitués de carcinomes (127), sarcomes (25) et 17 lymphomes ont été diagnostiqués. Il y avait d'importante différence dans la durée de l'évolution moyenne (EM) selon le type histologique (carcinome oral = 282,8 ± 414, les sarcomes orales = 219,2 ± 247,3 et 105,5 ± lymphomes orales 115 jours, p = 0,001). Le retard des patients était plus important que celui des professionnels pour tous les types de cancer (65,9%, 59,1% et 60,1% pour les carcinomes, les sarcomes et lymphomes respectivement). Il y avait également une importante différence dans la durée moyenne d'évaluation des cancers à un stade précoce par rapport aux cancers à un stade avancé (moyenne = 137,2 ± 99 et ± 355 266,4; p = 0,010).

Conclusion: La combinaison du retard des patients et celui des professionnels a influencé négativement la gestion des patients atteints de cancer de bouche mais le retard du patient reste la cause majeure de cette combinaison dans notre centre.

Introduction

Public health education is focused mostly on the early diagnosis of diseases to improve prognosis and reduce treatment cost. The late diagnosis of diseases like oral cancer is associated with advanced tumor stage, poor prognosis and increased morbidity and mortality [1, 2]. Despite recent advances in treatment modalities the 5- year survival rate of advanced stage tumor is still less than fifty percent [3]. A significant consequence of late presentation is that the best stage for favorable treatment outcome is missed.

Delay in the treatment of oral cancer patients may be due to patients' delay in presentation at orthodox health care facilities or professional delay by orthodox health care providers after patient's presentation. However, the most common reason is a combination of patient's and professional delay [3, 4].

There is ample documentation of the contribution of patient's delay and professional delay to the treatment outcome of oral cancer in the global literature but such information is limited in Africa. To the best of the authors' knowledge, only two African publications have addressed the issue of delay in management of oral neoplasms but both were not comprehensive about specified categories of delay. Oji *et al* [5] from Nigeria focused mainly on socioeconomic status and delayed presentation of oral tumors, while Onyango [6] from Kenya identified multiple referrals as the principal cause of delayed treatment for head and neck cancers.

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Therefore the aim of this study was to systematically examine the various stages of delay of treatment among oral cancer patients in a Nigerian tertiary hospital.

Materials and methods

The case files of persons with oral and maxillofacial cancers were retrieved from the archival records spanning the years 1991 to 2010 after serial case selection from the oral pathology tissue register. UI/UCH Ethical Review Committee approval was obtained prior to the commencement of the study .

Data obtained from the case files included the following:

(i) Bio data – age, gender
(ii) Clinical data for cancers – including broad histological types of carcinomas, sarcomas and lymphomas, clinical features e.g. topography, pain, ulceration, size and tumour node metastasis (TNM) stage.
(iii) Data for the categories of delay that included the following:

Evolution Time [ET] – period between initial notice of the lesion by the patient and presentation at our center.
Referral Time [RT] – period between patient referral and presentation at our center.
Biopsy Time [BT] – period between initial presentation at our center and the first incisional biopsy.
Pre-Histology Time [preHT] – period between first biopsy and definitive histologic diagnosis.
Post-Histology Time [postHT] – period between histologic diagnosis and initiation of treatment.
Treatment Time [TT] – period between first presentation and start of treatment.
Total Time Elapsed [TTE] – the sum total of Evolution Time and Treatment Time.
Follow up Time [FT] – period between commencement of treatment and last visit to our center by appointment, self-complaint, recurrence or death.

Professional delay by our definition is the addition of RT and TT. The duration of delay was recorded in days.

The data were analyzed using the version 16 software of SPSS. Quantitative variables of age and time lapse were expressed as mean, and/or median and standard deviation or range while qualitative variables of gender, age group and histological types were expressed as percentages. The strength of association between quantitative variables was determined using student's T test and ANOVA while that of qualitative variables was determined using chi-square test. Level of statistical significance was set at $p \leq 0.05$.

Result

Overall, 213 case files of oral cancer patients were reviewed. One hundred and sixty nine file documentations were satisfactory for inclusion in the study. The 169 oral cancer cases consisted of 127 cases of carcinomas, 25 sarcomas and 17 lymphomas. There were 74 males and 53 females among the oral carcinoma cases giving a male to female ratio of 1.4: 1, the sarcoma cases comprised of 15 males and 10 females giving a male to female ratio of 1.5: 1 while the lymphoma cases were 11 males and 6 females with a male to female ratio of 1.8: 1.

The overall mean ages of carcinoma, sarcoma and lymphoma cases were 56±15.8, 32.4±16.4 and 15.3±12.5 years respectively. The difference in mean ages according to histological types was statistically significant ($p = 0.001$). However, there was no significant difference in the mean ages of the histological types according to gender ($p = 0.836$ and $p = 0.298$).

Figure 1 shows the age group distribution of oral cancer cases according to histological types, there was a gradual rise in the prevalence of oral carcinoma cases from the first decade to a peak at the 7th decade followed by a steep drop until the 9th decade. The sarcoma cases presented with a peak in the 3rd decade while lymphomas had a peak in the 2nd decade.

The most frequent sites of oral carcinomas were the maxilla and mandible (31%) followed by the palate (18%) then tongue (15%). The sarcomas occurred predominantly in the jaws (80%) except for 2 cases (8%) of rhabdomyosarcoma of the cheek and a single case each of Kaposi sarcoma of the tongue (4%), fibrosarcoma of face (4%) and metastatic sarcoma in the submandibular gland (4%). The mean ET for all oral cancer cases was 255.6±377 days. There was a significant difference in the mean ET of the oral cancer cases according to histological types with the oral carcinoma cases showing the longest mean ET (282.8±414 days) followed by oral sarcomas (219.2±247.3 days) and the lymphomas showing the least (105.5±115 days; $p = 0.001$). Figure 2 shows Kaplan Meier survival estimates of ET delay according to histological types. The mean TTE of all oral cancer cases was 406.6±374.6 while those of carcinoma, sarcoma and lymphomas were 428.5±382.6, 370.9±393.9 and 265.7±195.7 respectively ($p = 0.724$) The percentage contributions of ET to TTE for all oral cancers and that for carcinomas, sarcomas and lymphomas were 62.9%, 65.9%, 59.1% and 60.1% respectively, showing that patients delay accounted for the larger part of total

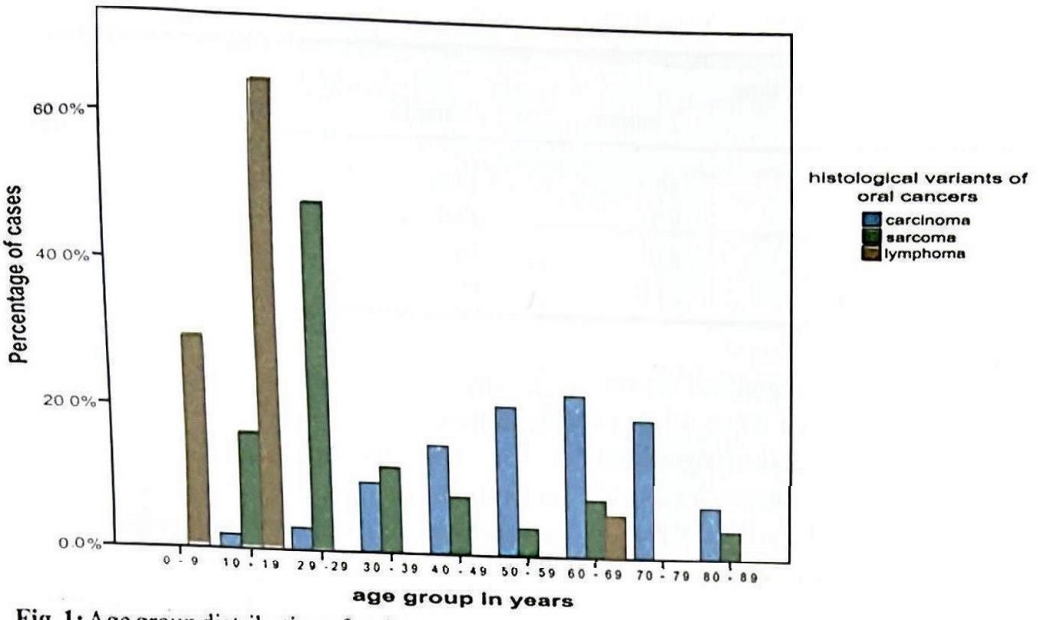

Fig. 1: Age group distribution of oral cancer cases according to histological types

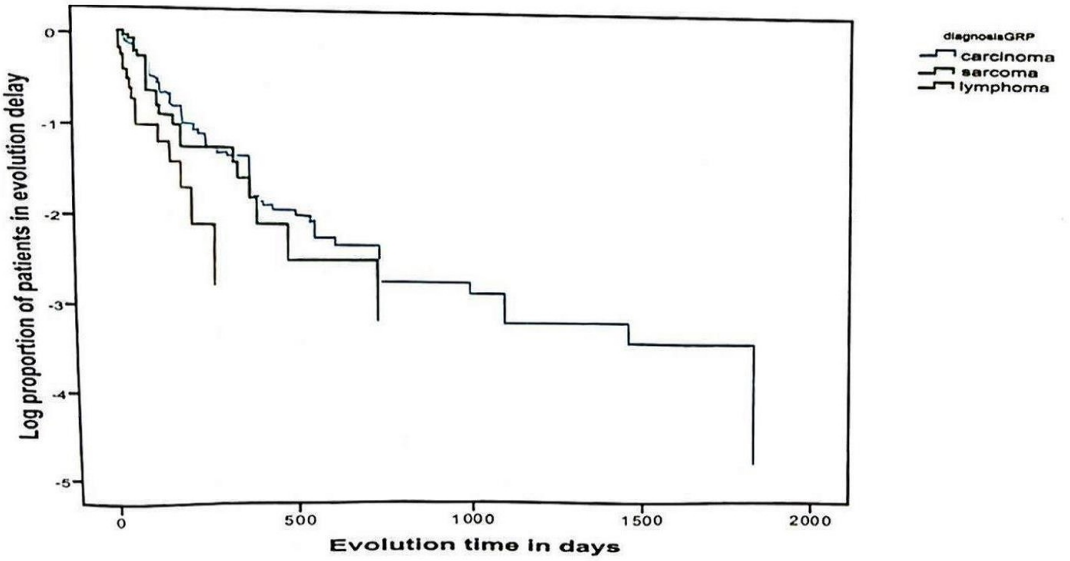

Fig. 2: Evolution time delay according to histological types

delay when compared with professional delay for all oral cancers and all histological types.

Among oral cancer cases, only 7.1% presented within the first month, majority (69.2%) presented after three months while as many as 41.4% presented six months after the onset of symptoms (Table 1). The oral carcinoma and oral sarcoma followed this delay pattern as there was no significant difference in the trend when compared with all cancers but the lymphoma cases were an exception as 29.4% presented within the first month, 52.9% presented within two months while only 23.5% presented later than six months. There was a significant difference in the delay pattern of the oral lymphoma cases when compared with the carcinoma and sarcoma cases ($p = 0.000$ and $p = 0.010$ respectively). There was no significant difference in the mean ET of the histological types according to gender.

Among the carcinoma cases, there was a significant difference in the ET of the jaw alveolar

Table 1: Percentage distribution of evolution time of oral cancers according to histological types.

Diagnosis group	Evolution time 1 month	2 months	3 months	6months	>6 months
All cancers	7.1	10.1	13.6	27.8	41.4
Carcinomas	4.7	8.7	13.4	28.3	44.9
Sarcomas	4.0	8.0	16.0	36.0	36.0
Lymphomas	29.4	23.5	11.8	11.8	23.5

lesions when compared with the gingival lesions (mean ET = 343.3±579.37 and 57±8.49 days respectively; p = 0.033). There was also a significant difference in the mean ET of lymphoma lesions of the alveolus when compared with the floor of mouth lesion (mean = 95.1±110.9 and 273±240 days respectively; p = 0.001)

Overall, 27 (16%) out of 169 oral cancer patients presented with early stage tumors (stage I and II), while 142 (84%) presented with stage III and IV tumors (Table 2).

Considering all oral cancer cases, there was a significant difference in the mean ET of the early stage cancers compared with the late stage cancers (mean = 137.2±99 and 266.4±355; $p = 0.010$), there was however no significant difference in the stage of lesions according to site ($p = 0.847$).

According to gender, there was a significant difference in TT and TTE among the oral carcinoma and oral sarcoma groups (Table 3). However there was no significant difference in the TTE according to age group for all cancer cases and for carcinomas and sarcomas ($p = 0.882$, $p = 0.776$ and $p = 0.724$ respectively).

The mean and the median RT for all cases of oral cancer were 10.4±25.5 days and 3 days respectively. The range of TT (professional delay) from the first visit to our specialist hospital until commencement of treatment was 11 to 1029 days with mean and median of 141.4 and 54 days respectively. The contributions of RT to professional delay and treatment delay were 2.6 and 7.4% respectively. However there was no significant difference in the mean TT between early stage tumors and late stage tumors (p = 0.845).

Table 2: Stage distribution of oral cancer cases according to histological types.

	Early		Late		Total	
	N	%	N	%	N	%
Carcinoma	21	12.4	106	62.7	127	77.4
Sarcoma	2	1.2	23	13.6	25	19.4
Lymphoma	4	2.4	13	7.7	17	3.2
	27	16	142	84	169	100

The mean BT was 41.75 ± 114.4, median time = 8 days. In an assessment of minimum delay, maximum biopsy time was set at < 17 days and maximum TT was set at < 30 days, these set time frames for early biopsy and treatment was achieved in 57.7% and 25.5% of cases respectively. A comparison of the stages of delay in oral cancer management with previous studies elsewhere showed that the range of referral time in this study

Table 3: Gender distribution of TT and TTE of oral cancer cases according to histological types

	TT					TTE				
	Males		Females		P Value	Males		Females		P Value
	Mean	s. d.	Mean	s. d.		Mean	s. d.	Mean	s.d.	
Carcinomas	131	172.8	187.8	269	.02	319.3	242.3	603.1	497	.001
Sarcomas	64.5	58.8	140.3	281.7	.000	224.5	81.6	444.1	471.8	.022
Lymphomas	66	111.6	121	151.3	.788	229.0	260.2	339.0	194.6	.816

Table 4: A comparison of the stages of delay in the management of oral cancer patients

Author	Years of data collection	Country	Initial consult to referral	Referral to specialist appointment (RT)	Specialist appointment to diagnosis (BT+ preHT)	Diagnosis to treatment (PostHT)
Sharp	1994	Sweden	0	6	9	35
Sharp	1998	Sweden	0	10	21	29
Brouha	2000 - 2002	Holland		7	14	53
Peacock	2003 - 2007	USA	35.9	17.7	47.4	
Scully	1982 - 1985	England	31, 40	4	4	7
Abdo	1999 - 2001	Brazil		M=27.9; . F=40.6	M=40.9; F=44.9.	
Present study	1991 - 2010	Nigeria		M=7.5; F=14.5.	M=67.4; F=84.8.	M=55.4; F=103.1.

is similar to the Caucasian values generally but there was prolonged delay in both investigation and treatment in this study (Table 4).

Discussion

In Nigeria, consultation with an oral cancer care specialist can be a convoluted process. Mostly, the patient would have first conferred with unorthodox and unqualified persons before visiting a primary or secondary health care facility. They may then be referred to tertiary health centers, as these are the only health centers that have adequate facilities and specialists for cancer care [5, 7].

The mean age of presentation of oral carcinoma cases in this study was 56 years, this agrees with some studies [8, 9, 10] but is about a decade lower than that reported in other studies [11-13]. The low mean age can be attributed to the lower life expectancy in underdeveloped countries, especially in oral squamous cell carcinomas (OSCC) [14, 15]. Among the oral carcinoma cases in this study, up to 16.9% were less than 40 years old while 83.1% were older than 40 years.

In this study the major cause of delayed treatment of oral cancers was the late presentation of patients. Patients' delay in the present study is longer than in other comparable studies, with our mean patients delay extending beyond the documented range of 1.7 to 5.6 months [16-18]. Majority of our patients presented later than three months after onset of symptoms. Furthermore an overwhelming majority presented with late stage tumors, a finding that contrast with developed countries [19, 20] but is often seen in underdeveloped countries and has been ascribed to ignorance, wrong cultural beliefs, poverty, shortage of skilled personnel, inadequate medical facilities and poor transportation systems [5, 21].

The significant difference in the mean ET of lymphomas compared to the carcinomas is most likely due to the rapid rate of progression of Burkitt's lymphoma. Burkitt's lymphoma is documented to have a doubling time of 24 hours compared to the doubling time of 6 to 7 days for head and neck carcinomas [4]. Despite the relative early presentation of Burkitt's lymphoma cases, most were already in stage III at presentation. Among the oral carcinoma cases the significant difference in the mean ET of gingival lesions when compared with alveolar lesions suggest that gingival lesions may represent the early stage of oral cancer while the alveolar lesions are advanced stages of the same lesion. Expectedly, the early stage tumors presented a significant shorter mean ET in this study when compared with the late stage tumors in keeping with some studies [16, 22, 23] but contrary to others [24-26].

The significantly prolonged TT among females compared with males despite earlier clinical presentation of females may be related to socio-cultural issues. Most women are low-income persons with total dependence on their husbands for consent and financial support for treatment.

The mean RT in the present study is similar to that in previous studies [17, 19, 27] but much lower than in other reports [28, 29]. The insignificant contribution of RT to the total delay may not be completely true, as the complete chain of referral delay information is either not volunteered by the patient or not documented by the attending professional. In our environment referral delays consist of the time spent from unorthodox healers to the primary and then secondary health care centers,

before being finally referred to the tertiary health center, this phenomenon is corroborated by other reports [5, 6, 30]. The only available referral information in this study was the duration from the secondary facility to our center. Therefore there is an underestimation of the true referral delay. Kerdpon *et al* [16] documented a similar pattern of chain referral in a Thailand study. However, unlike in Nigeria where the burden of cancer care is the sole responsibility of the patient, there is free or highly subsidized cancer care at tertiary hospitals in Thailand.

FT delay is another challenge as patients repeatedly miss scheduled appointments or make requests for longer appointment periods due to poor awareness of the seriousness of the condition, resignation to 'fate' and difficulties with transportation. Upon presentation at our center, the patient is scheduled for a clinic appointment. The "scheduling delay" could range from 0 to 7 days. In this study the mean time for diagnostic delay is longer than those of previous studies [24, 26, 28, 29]. This may be due to prolonged imaging and laboratory processing time. BT delay contributed 20-30% of diagnostic delay in this study.

TT delay was given as 47 days by Brouha, 16.6 days mean by Peacock, 7 days by Scully, and less than 42 days for 95% of patients by Hollows [17, 25, 28, 29]. The present study obtained median and mean delay periods of 21 and 71.3 days respectively. In an American study, causes for treatment delay included insurance authorization, operating room scheduling, and patient decisions [3]. The recently established National Health Insurance scheme (NHIS) in Nigeria does not cover cancer treatment; hence cancer care is unduly protracted. In Nigeria, the usual cause of treatment delay is the patient's decision to defer surgery for financial reasons. Also the initial recourse to unorthodox medicine, poor socioeconomic status of the patients and non-availability of a referral hospital with adequate histopathology facilities and appropriate manpower for the management of head and neck cancers could have influenced the late reporting to the hospital [5, 30].

In conclusion, a combination of patients and professional delay was the main cause of delay, although the patients' delay formed the bulk of this combination in our centre. Patients with lymphomas presented significantly earlier than those with carcinomas and sarcomas. A considerable delay in the treatment of females was observed compared with male patients.

This study highlights the need for concerted efforts in oral health awareness and advocacy concerning prompt attention to, and care of oral cancer both by the patients, and attending medical practitioners. We suggest that the NHIS be revised to include the management of cancer patients. This will reduce financial and psychological burden on these patients, thus encouraging early presentation and treatment that improves prognosis.

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