ORIGINAL ARTICLE

COMMON FACTORS DELAYING THE DIAGNOSIS OF ORAL CANCER

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ABSTRACT

Oral cancer is a serious health issue that has a universal occurrence. Cancer is the top cause of death in economically developed countries and the second most lethal entity in developing countries. Oral cancer has a five-year survival rate of 50% or less. This rate is much improved when lesions are diagnosed at an early stage of the disease (i.e. small and localized). Detecting oral cancer at an early stage is believed to be the most effective means to reduce morbidity and duration of treatment.

The objective of the study was to determine the frequency of common factors delaying the diagnosis of oral squamous cell carcinoma. A Descriptive, cross sectional study was carried out in Department of Oral and Maxillofacial Surgery, Khyber College of Dentistry, Peshawar over a period of six months. Using structured proforma, data from 108 patients with delay in the diagnosis of oral squamous cell carcinoma were collected through history taking, clinical examination and histopathological confirmation.

Delay in the diagnosis of squamous cell carcinoma was predominantly found in male patients with a male to female ratio of 3.15:1. The mean age of the patient was 59.59. Most of the patients reporting with delay in the diagnosis were in the 6th decade of life (30.5%) followed by 5th decade (24.99%). The most commonly involved site was mandibular left gingivolabial sulcus (22.2%). Most of the patients with delay in diagnosis reported in stage IV (75%). Patient delay was seen in 26.85% of the patients, with a professional delay of 14.81% of the patients. Both types of delay i.e patient and professional delay was seen in 58.33% of the patients. Amongst 108 patients a total delay in days of more than 200 days was seen in 39.82%, 25.92% of the patients had delay of more than 50 days.

Delay in the diagnosis of squamous cell carcinoma was found more in males than females. Delay was most commonly seen in the 6th decade of life with most of the patients reporting in stage 4. Patient delay was 26.85%, professional delay in diagnosis was 14.81%. Both types of delay was seen in 58.33% of the patients and 39.82% of the patients reported with total delay of more than 200 days.

Key Words: *Oral cancer, snuff dipping, patient delay, professional delay and total delay.*

INTRODUCTION

Oral cancer is a major public health problem, with 350,000 to 400,000 new cases identified worldwide each year. Incidences vary widely between countries and geographical areas, but it is generally common in developing countries.[1] Oral and pharyngeal cancer constitutes about 2% of all malignancies. Early diagnosis and treatment of oral cancer can significantly decrease morbidity associated with treatment and improve overall long term survival.[2] Diagnostic delay in oropharygneal cancer may be associated with poor prognosis.[3] When lesions become symptomatic, patients complain of pain, bleeding, ulceration, a mass, dysphagia or odynophonia, however, before the patient becomes symptomatic, the lesion is often growing and metastasizing.[4] Late presentation is an important issue as advances disease requires more radical treatment and associated with poor prognosis.[5] Among the assessments of prognosis of oral cancer patients, one of the most popular methods is the cancer staging system proposed by the International Union Against Cancer Tumour Nodal Metastasis (TNM) Classification.[6] Advanced TNM stages (3 and 4) are related to poor prognosis in patients with oral squamous cell carcinoma.[7] Some predictors of survival are related to the patient, such as gender, race, socioeconomic status, education and family status and some are related to the tumor itself such as tumor biology, location, grade and stage at diagnosis.[8]

Oral cancer has one of the lowest 5 years survival rates (<50%) among the major types of cancer, including

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breast, skin, testes, prostate, uterus and urinary bladder cancers. Delays in diagnosis include two periods. The time from the onset of symptoms to the initial visit to a dental or medical professional is known as patient delay. Professional delay is the time during which the patient is under professional care until a final diagnosis is made i.e. the tumor is confirmed histologically to be malignant. The total delay is the sum of patient and professional delay.[9]

One important contributing factor in late stage disease is patient delay.[10] In a study done at England it was found that lack of oral cancer knowledge was one of the independent predictors of patient delay.[11] Health care providers must place great emphasis on educating patients about the importance of vising a clinician as soon as oral symptoms develop. They can visit a dentist or a physician and the clinician should schedule an early appointment for these patients.[10] Patients with a regular primary care dentists are more likely to be diagnosed at earl stages (65%) than those without a regular primary care dentist (41%).[12]

In one of the latest study a total delay of four months was found, out of which patient delay was 66% and professional delay was 34%.[13] Scott et al[14] conducted detailed interviews with 17 oral squamous carcinoma patients before treatment. In this small sample oral symptoms were rarely attributed to cancer and regarded mainly as minor oral conditions. Consequently, patients either delayed seeking help or were unconcerned about their symptoms.

Before seeking professional help they had used self-medication, changed the way they ate and had told family or friends about their symptoms. Social responsibilities and problems with access to healthcare professionals were seen as barriers to seeking help.

The rationale of this study was to report in oral squamous cell carcinoma patient the common factors responsible for delaying the diagnosis. This data will be helpful because the prognosis of the disease is stage dependent, if the patient reports with delay the tumor will be in advanced stage with poor prognosis. By identifying the patient delay, awareness about oral cancer and self-examination can be promoted. If professional delay is the delaying factor recommendations and suggestions regarding early referrals to tertiary care can be given and biopsy taking will be considered as a first step in the diagnosis of a non-healing ulcer, that is highly suspicious of oral squamous cell carcinoma.

METHODOLOGY

A descriptive, cross sectional study as conducted in Department of Oral and Maxillofacial Surgery, at Khyber College of Dentistry, Peshawar. Over a period of 6 months after taking the approval from hospitals ethical and research committee. A total of 108 patients of oral cancer were recruited in the study using, Consecutive sampling (non-probability). All patients with oral squamous cell carcinoma with delay in diagnosis of more than 35 days, regardless of the age and gender were included in the study. The diagnosis was confirmed with biopsy and histopathological confirmation. All patients were subjected to detailed history and careful medical record scrutiny to detect whether the delay was on behalf of patient, professional or both. Those patients with recurrent oral cancers as diagnosed by history and medical records, and those with history of previously treated oral caners were excluded from the study.

The purpose and benefits of the study were explained to all patients and a written informed consent obtained. All the above mentioned information including name, age and gender were recorded in a pre-designed proforma. Strictly exclusion criteria were followed to control confounders and bias in the study results.

The collected data was analyzed in SPSS version 17. Mean was calculated for numerical variables like age and total delay in days. Frequencies and percentages were calculated for categorical variables like gender, stage at diagnosis and common factors delaying the diagnosis of oral squamous cell carcinoma (patient delay and professional delay). Common factors delaying the diagnosis were stratified among age gender and total delay to see the effect modifications. All results were presented in the form of tables and graphs.

RESULTS

1) Age Distribution

In this study 108 patients were recruited. Among these 82 (75.9%) were males and 26 (24.1%) were females with male to female ratio of 3.15:1. The mean age of the patient in the present study was 59.59 ± 12.63 years. The age range was from 25 to 100 years and 16.5% of the patients were suffering from delay in the diagnosis of squamous cell carcinoma below 50 years. The most commonly involved age group was 6th decade (30.5%), followed by 5th decade (24.99%) and 7th decade (17%). The details are given in Table 1.

2) TNM staging of tumour

Among 108 patients with delay in the diagnosis of oral squamous cell carcinoma, 75% were found in stage IV and 13.9% in stage III. The details are given in Table 2.

3) Histopathological grading of tumour

On histopathological grading 59.3% of the tumours were well differentiated, 25% were moderately differentiated and 15.7% were well to moderately differentiated oral squamous cell carcinoma.

TABLE 1: AGE DISTRIBUTION OF PATIENTS PRESENTING WITH DELAY IN DIAGNOSIS OF SCC

S. No.	Age in years	n	(%)
1	21-30	1	0.9
2	31-40	8	7.4
3	41-50	19	17.5
4	51-60	40	37
5	61-70	25	23.1
6	71-80	13	12
7	81-90	1	0.9
8	91-100	1	0.9
Total		100	100

TABLE 2: PERCENTAGE OF STAGING OF THE TUMOUR

Stage of tumour	n	%
Stage I	6	5.6
Stage II	6	5.6
Stage III	15	13.9
Stage IV	81	75
Total	108	100

TABLE 3: SITE DISTRIBUTION IN PATIENTS OF SCC

Site of the lesion	n	%
Mand Lt Ging Lab Sulcus	24	22.2
Mand Rt Ging Lab Sulcus	14	13
Max Rt Ging Lab Sulcus	5	4.6
Max Lt Ging Lab Sulcus	7	6.5
Buccal Mucosa	12	11.1
Post Lat Border of tongue	11	10.2
Retromolar Trigone	4	3.7
Floor of Mouth	4	10.2
Hard palate	3	2.8
Alveolus and buccal Mucosa	13	12
Alveolus extending to buccal Mucosa and floor of Mouth	11	10.2
Total	108	100

TABLE 4: TOTAL DELAY IN DAYS OF PATIENTS

Total delay in days	n	%
Less than 50	5	4.63
50-99	28	25.92
100-149	9	8.33
150-199	23	21.30
200 and more	43	39.82
Total	108	100

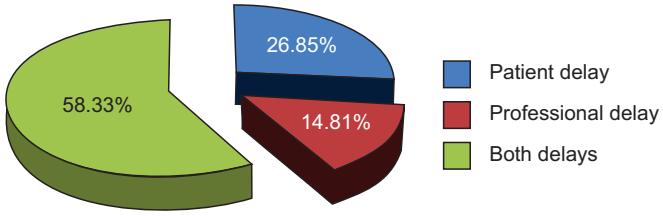

Fig 1: Percentage of patient, professional and both delays

4) Delay

In this study, 26.85% (29) of the patients presented with only patient delay in the diagnosis of squamous cell carcinoma. While 14.81% (16) of the patients presented professional delay and 58.33% (63) of the patients presented both patient and professional delay in the diagnosis. (Fig 1)

5) Total delay

Amongst 108 patients, 39.82% had a delay of more than200 days, 25.92% of the patients had a delay of more than 50 days. The details are given in Table 4.

6) Site distribution

Amongst the snuff dippers mandibular left gingivolabial sulcus (Fig 2), was the most common site of OSCC (22.2%), which was also the most common primary site of snuff dipping in both male and female patients. The other primary sites of snuff dipping, where OSCC had occurred were mandibular right gingivolabialsulcus (13%) (Fig 3), left upper gingivolabial sulcus (6.5%) and maxillary right upper gingivolabial sulcus (4.6%). Amongst the secondary sites the most commonly involved site in snuff dipper patients was buccal mucosa (11.1%) (Fig 4), lateral posterior border of the tongue (10.2%) (Fig 5), followed by retro-molar triagone 3.7% and floor of the mouth (3.7%) (Fig 6). In patients with field cancerization most commonly involved was alveolus and buccal mucosa (13%) followed by alveolus extending to floor of the mouth and retromolar trigone (10.2%) (Fig 7). Amongst the smokers the most common site was the hard palate (2.8%).

DISCUSSION

Stage at diagnosis is a very important parameter; longer delay would be associated with more advanced stages of disease at diagnosis. If left untreated, cancer will progress and eventually spread; therefore, in theory diagnostic delay can lead to regional or distant metastasis and to adverse health outcomes. It is currently unclear what proportion of patients develops an aggressive form of oral cancer as compared with a latent lesion that might require many weeks to advance from one stage to the next. Understanding tumor biology and tumor aggressiveness becomes imperative for the proper clinical management of the patient.

Aggressive tumors manifest abruptly, with signs of advanced disease such as regional lymphadenopathy, or enlargement, or distant metastasis. When tumors are aggressive, the length of time between when a person first detects a symptom and the moment they see a health care professional to request care seems short; the window of opportunity to act early is very narrow or absent.[8]

Delays in the diagnosis of oral cancer have classically been divided into factors both related with the patients (patient delay) and with the health professionals (professional delay).[15] Patient delay is defined as the time between a patient's first awareness of symptoms of oral cancer and their first consultation with a health care professional regarding those symptoms. It has been shown that patient delay makes up the largest part of the total delay from when the patient first becomes aware of symptoms to a definitive diagnosis of oral cancer.[16]

Factors contributing to patient delay are diverse. Scott et al:[14] grouped these factors into categories. Like clinical/ tumor factors, patient socio-demographics, health related behaviors, healthcare factors and psychosocial factors. Professional delay consists of two parts. Firstly, the time from first consultation with a health care professional to the time of definitive diagnosis (pathology report following biopsy). The second component of professional delay was, the time from diagnosis to patient treatment (operation date for primary surgery). Professional delay in the diagnosis of oral cancer also includes the time taken for intermediate assessment at the peripheral oral and maxillofacial unit for patients outside the catchments area of the regional centre. Professional delay is less of a problem than patient delay.[17] Total diagnostic delay includes the patient delay and the professional delay and scheduling delay. This process consists of four steps: the first is from the onset of symptoms or signs associated with cancer to a visit to a medical facility; the second is from the initial visit to the patient's receipt of a referral letter; the third is from receipt of the letter to a visit to professional institute; the fourth is from the visit to the determination of definitive diagnosis.[16]

In the present study, 75.9% male and 24.1% females had delay in the diagnosis of oral cancer with male to female ratio of 3.15:1. Schnetler[18] reported in his study, a male preponderance with a male to female ratio was 1.7:1. The reason for male predominance in this study was large number of male patients had a positive history of snuff dipping than female, and the frequency and duration of the habit.

In the present study the age of patients varied from 21 to 91 years, with the mean age of 59.59 years. Highest number of patients was found in 5th and 6th decade of life. Gurk et al[19] found delay in diagnosis of OSCC in patients with an age range of 16-95 years with the mean age of 61 years.

In this study, 75% of the patients presented with delay in diagnosis of squamous cell carcinoma were in Stage IV. This correlates with the study of Kerdpon[20] in which advanced stage disease was diagnosed in 61.5% of the patients. In the present study the reason for more delay in the advanced stage of disease can be due to location of the tumor at less visible areas. Tumours located posteriorly in the oral cavity are detected later than those located in the anterior portion of the mouth both by self-examination and clinical examination. Tumour of smaller size and endophytic masses usually remain undetected and is associated with more delay. Scot et al[21], who studied idiosyncratic relationship between diagnostic delay and stage of OSCC found no significant association between duration of diagnostic delay and stage of disease at diagnosis, suggesting advanced stage disease is not always a consequence of delayed diagnosis and concluded that biologically aggressive tumors will grow to an advanced stage after only a short period of delay, due to the pace of tumor growth. Conversely, patients with slow growing tumors may have early stage disease at diagnosis even after a substantial period of diagnostic delay. Early lesions can also be asymptomatic and go unnoticed by patients. Kaufman[22] reported advanced stages of head and neck cancer had shorter intervals between the onset of first symptom and diagnosis, however, the preclinical phase of disease can be a long period of time. For this purpose, screening examination of high risk patients is the most reasonable method for early detection. The effect of a health education campaign for the earlier diagnosis of oral carcinoma can also be efficient.

In the present study the most common site involved in patients with delay in the diagnosis of OSCC was mandibular left ginigivolabial sulcus (22.2%) followed by mandibular right gingivolabial sulcus (13%). As most of the patients had history of snuff dipping and the most common site where the snuff was held against the mucosa was mandibular left and right gingivolabial sulcus. This analysis correlates with the study by Hirsch et al[23] who reported that oral effects of the smokeless tobacco are typically seen on the mucosal surfaces where the product is placed i.e. the primary site of placement of the smokeless tobacco and also concluded that smokeless tobacco, is one of the main cause of oral cancer, typically 20-50 years of its use is required to cause the malignant changes in the oral mucosa. The findings of our study correlates with the study of Khan[24] who reported that amongst the snuff dipper patients, 48.75% cases the mandibular left gingivolabial sulcus was the most commonly involved site in both sexes, which was the most common site of

snuff dipping too and in 16.25% cases where the lesion had occurred was mandibular right gingivolabial sulcus. In the present study most common secondary site involved was alveolus and buccal mucosa (12%), buccal mucosa (11.1%), posterior lateral border of the tongue and alveolus extending to buccal mucosa and floor of the mouth equally involved (10.2%). These findings correlate with the study of Khan[24] in which amongst the snuff dippers the most common secondary sites where snuff was not held were, posterior lateral border of the tongue (11.24%), followed by retro-molar triagone (5%) and buccal mucosa (3.75%). The reason being most of the population in the Interior Sindh, Hyderabad and Karachi are in the habit of Paan (betel nut) chewing, which is retained against the buccal mucosa. The secondary site involvement may be because of dissolution of the carcinogenic compounds TSNA (tobacco-specific N-nitrosamine) in the saliva, when such saliva bathed the other areas of the mouth over the years, they are affected.

In the present study the total delay in days in the diagnosis of OSCC was in the range below 50 days to above 200 days. 39.82% of the patients had a delay of more than 200 days, 25.92% of the patients had a delay between 50-90 days. Only 4.63% of the patients had a delay of less than 50 days. This correlates to the study by Allison[25], who calculated total delay in months. In Allisons25 study a maximum delay of more than 6 months was reported in 29.8% cases, a delay of 4-6 months was seen in 28.7% cases and a delay of 1-3 months was found in 21.8% cases.

In the present study, amongst 108 patients, 26.85% patients reported with patient delay. The findings of our study, correlates with the study by Robbins[26] in which the patient delay was 31.2%. There was also a non delay group of 32.5% which was not found in our study. In the present study there are a number of reasons why people do not visit clinicians soon after noticing symptoms. One reason is that the people in this part of the world often have financial barrier due to which they report late for oral cancer. Mostly patients in the present study delayed treatment due to low socioeconomic status. Also patients are not educated and have lack of knowledge about oral cancer. Patients generally thought their symptoms were trivial, would get better by themselves and gave little thought as to it might be cancer. Self medication and use of herbal medications was also an important factor for patient delay. The reason for increased patient delay in the present study is also due to pain free nature of the disease at initial stages. Patients who had lumps, mass or an ulcer had less patient delay than those who did not have such symptoms. Cancer at asymptomatic stage can be detected by self examination which most of the patients are not aware of in this part of the world. In this study, patients from Northern areas of Pakistan, tribal areas and from Afghanistan presented with advanced stage disease and more patient delay due to lack of finances and more distance from health care facility. These findings correlate with the study by Scott's[14], who found that deprived patients were less likely to notice malignant lesions in their early stages and that patients of a lower socioeconomic status were more likely to delay seeking health care consultation.

In the present study professional delay of 14.81% was found. The findings of our study correlates with the study by Gurk[19] in which a professional delay of 11.84% contributed to the diagnostic delay in head and neck cancer. Most of the patients initially visited dental technicians who advised antibiotics and mouth washes to the patients who had complaint of non healing ulcers. Eighty percent of the patients when reported to Khyber College of Dentistry had history of extraction after which there was progression of the disease. The reason for this was, patients who presented in stage IV with invasion of the disease into the surrounding structures had bony invasion causing mobility of associated teeth. The first treatment provided to such patients was extractions of mobile teeth which resulted in further seeding of the tumour. Identified causes of professional diagnostic delay in this study were not to practice a full clinical examination, low index of suspicion and lack of familiarity and experience with the disease. A study done by Rehman and Khan[26] in the same institute, on the awareness of oral cancer in undergraduates students showed that a significant number of medical (84%) and dental students (83%) thought that oral squamous cell carcinoma is the most common oral malignancy and were able to identify premalignant conditions, it was also concluded that in future the professional delay will be avoided because the undergraduates of today are the General dental or medical Practitioners of tomorrow. But in the present study most of the patients were from far flung areas and they initially reported to the practitioners in the periphery, who did not have enough awareness about oral cancer. Patients who initially presented to general dental practitioners with small ulcers were delayed in the diagnosis because early lesions were asymptomatic and such lesions were treated as apthous ulcers without taking biopsy. Patients with larger tumors (T3-T4) anteriorly situated had less delay than those with small (T1–T2) tumors and posteriorly situated. This correlates with the results of study by Wildt et al13 who found that patients with small tumors had more professional delay. One possible explanation is that diagnosis is easier when the tumors are larger because they are visible and cause more complaints.

In the present study, patients who presented to medical practitioner had less delay than those who

presented to dental practitioners. The reason for this is as medical practitioners are not much aware with the disease referred the patients earlier to specialist than dental practitioners. Dental practitioners provided some form of treatment and delayed referral to the specialist, also did not take any adjunctive measures for diagnosis of suspicious lesions like visilite, velscope, toluidine blue staining. These findings correlate with the study by Oinzawa[16] in which lesser referral delay was found from medical practitioner than from general dentists. Most of the patients in this study, who belonged to far flung areas presented initially to local hospitals with limited facilities and more professional delay. In this study a mutual delay of 58.33% was found. This group included patients both with patient and professional delay in the diagnosis of oral squamous cell carcinoma. Factors associated with patient delay included socio-demographic factors, habits like history of snuff dipping and no cessation of the habit even after initiation of symptoms, self medication and use of herbal medications on non healing ulcers. Patient's ability to access healthcare system like financial issues, lack of transportation and health issues were also important factors of delay in these patients. Factors due to lack of responsibility on behalf of healthcare provider included lack of knowledge about the disease which included inability to recognize suspicious or premalignant lesions, inappropriate treatment provided in the form of antibiotics, painkillers and mouth washes, lack of referral to specialist and also barriers seeking professional advice due to financial issues and travelling difficulties for individuals from far flung areas. In a study by De Lawter[27] 18.8% of patients had both patient and professional delay at the same time there was also a non-delay group of 29.4%. These findings do not correlate with the findings of the present study because of the different geographic background and population characteristics in this part of the world. Another possible explanation for this is lack of awareness about oral cancer on behalf of the patient due to lower education level of people in this part of the world to consider their symptoms important. Also due to lack of facilities and over burden on the healthcare provider there is increased percentage of mutual delay in the present study.

CONCLUSION AND RECOMMENDATIONS

Health awareness message to the public about oral cancer is an important step in early diagnosis of oral cancer. Routine dental checkups and health care providers must place greater emphasis on educating patients about the importance of visiting a clinician as soon as oral symptoms develop. Identification of risk factors e.g by avoiding exposure to all forms tobacco by taking help of media should be considered.

Increasing awareness of oral cancer is to institute a self-examination campaign which will enable patients to detect asymptomatic cancers at early stages. Not only does self-examination increase the frequency with which the oral cavity is screened, but also lessens burden to the health care system.

Training and a sound knowledge of the disease presentation at undergraduate and professional (medical and dental) is important. Oral cancer awareness is essential to make sure that health care professionals have an appreciation of signs, symptoms and to consider early urgent referral process. A detailed intraoral examination by clinicians and use of adjunct techniques for early detection of the disease in high risk patient can be helpful in early diagnosis of the disease. The government should provide a prompt and efficient oral primary care service, which need to be accessible to all, particularly to under-served populations. Also assure a reduction in the time needed to see a healthcare professional. Priority should be given by health care provider to high risk patients or with signs or symptoms of oral cancer to reduce scheduling delay. Most of the patients in this part of the world are of a low socioeconomic background and cannot afford dental treatments. Free dental camps and checkups should be provided by the government for such patients. Dental services are not affordable for low-income patients; it is more likely that at-risk population visits a physician rather than a dentist. In these situations oral examination should be performed for these patients during routine medical examinations.

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Sana Wazir:	My original research work, all data collected by myself with a preset proforma in the Department of Oral and Maxillofacial Surgery, in Khyber College Of Dentistry within a period of 6 months.
Muslim Khan:	Idea given for research execution and helped in discussion writing and research article written in overall supervision of Dr Muslim Khan.
Qiam-ud-Din:	Helped in methodology and overall supervision.