STAGING AND GRADING OF SQUAMOUS CELL CARCINOMA OF THE TONGUE

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ABSTRACT

The study was undertaken on the biopsies confirmed patients of Squamous Cell Carcinoma of the tongue, in oral and maxillofacial surgical unit of Khyber College of Dentistry, Peshawar for a period of27 months i.e.,. From January 2004 to March 2006. A total of23 patients of squamous cell carcinoma of the tongue were included in the study. Most of the patients were in advanced stege (stage III and IV), 43.47% and 30.43% respectively on the basis of TNM classification of staging. The most common histopathological pattern was well differentiated squamous cell carcinoma G1 (73.91%). Posterior lateral border of the tongue is the most common site of the tongue involved (52.17%). SCC of the tongue was more common in males (65%) as compared to females 35%. The age range was 28 to 77 years with the mean age o f 46.21 years (SD + 12.28) with the maximum incidence in the .4th decade of life. 39.13% ofthe patients were snuff (Niswar) dippers. The aim of the study was to determine theTNM staging and grading of patients with SCC ofthe tongue. This system provides an objective standardized assessment to aid planning, facilitating the exchange of information and determining the prognosis and potential for cure.

Key words: *Tongue Cancer, TNM System, Advance stage, Khyber College ofDentistry Squamous Cell Carcinoma, SCC.*

INTRODUCTION

Oral squamous cell carcinoma (SCC) is the most common malignant tumour of the oral cavity arising from the stratified squamous cell epithelium of the oral mucosa, corresponding to 95% of malignant lesions.[1] Worldwide SCC is the 6th common cancer and in the Indian subcontinent it is a major problem.'

SCC of the tongue is a common malignancy treated by surgeons. Tongue is a complex anatomical site and its form and function are crucial for efficient swallowing, speech and appreciation of taste. In past different methods of treatment have been employed but SCC of the tongue has been a difficult area to assess and treat. The prognosis of SCC of the tongue is poor compared to other subsites in the oral cavity.'

When compared to other sites SCC of the tongue has a greater predilection for cervical metastasis (incidence 15 to 75%). In clinical practice the treatment planning and prognosis of the oral SCC is mainly based on TNM classification of staging.'

Clinical and radiological assessment is used to determine the extent of the tumor, and is commonly expressed as staging. The most widely used staging system is the Tumour. Node, Metastasis (TNM) system conceived by International Union against Cancer (UICC) in 1987 and modified in 1997.[5,6] Within this system Tumour (T) is assessed as the maximum diameter of

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the tumour, Node (N) the number and distribution of metastases in the regional lymph nodes, Metastasis (M) the presence of or not of distant metastases table 1. Staging of the tumour provides an objective standardized assessment to aid planning, facilitating the exchange of information and determining the prognosis and potential for cure.'

TABLE 1: CLINICAL STAGING OF ORAL SQUAMOUS CELL CARCINOMA'

TUMOUR (T)			
Ti	Greatest diameter < 2cm		
T2	Greatest diameter 2 to 4cm		
T3	Greatest diameter > 4cm		
T4	Invades adjacent structures		
LYMPH NODES (N)			
NO	No clinically positive lymph node		
Ni	Single ipsilateral node < 3cm		
N2a	Single ipsilateral node 3 to 6 cm		
N2b	Multiple ipsilateral nodes < 6cm		
N2c	Bilateral or contra-lateral nodes < 6cm		
N3G1ode > 6cm			
METASTASIS (M)			
MO	No distant metastasis		
M1	Distant metastasis		
CLINICAL STAGING			
Stage I	T1	NO	MO
Stage II	T2	NO	MO
Stage III	T2	Ni	MO
	T2	N1	M0
	T3	N0, N1	M0
Stage IVA	T4	NO, N1	MO
Stage IVB	Any T	N2, N3	MO
Stage80%).9ny T	Any N	M1	

The term differentiation refers to the extent the tumour cells resembles their mother cells (cells of origin) i.e. cells of stratified squamous epithelium both structurally and functionally. And according to the degree or grade of differentiation of its neoplastic cells, Oral SCC is graded as follows.[8]

GO- Grade cannot be assessed

Gl- Well differentiated oral SCC

G2- Moderately differentiated oral SCC

G3- Poorly differentiated oral SCC

G4- Undifferentiated oral SCC

Most of the oral squamous cell carcinomas belong to the well differentiated category (about 80%).[8]

MATERIALS AND METHODS

All the patients with SCC of the tongue referred to oral and maxillofacial Surgery unit Khyber College of Dentistry were thoroughly evaluated by comprehensive history taking and local and general physical examination supplemented by imaging studies like orthopantomogram, computerized tomogram (CT) and Megnetic Resonance Imaging (MRI). Both incision and excision biopsies were performed, the specimens were sent to pathologists for histopathology and were confirmed as squamous cell carcinoma. For neck assessment palpation was done supplemented by CT and MRI.T1hest radiographs full blood examinations and liver function tests were done to screen for metastatic disease. Tumors staging was done from Stage I to IV i.e. (from eaN1y stage to advance stage SCC) On the basis of TNM classification and were graded from Go to G4 i.e. (from well differentiated to un-differentiated SCC)

RESULTS

AGE

The age range was from 28 years to 77 years with the mean age of *44.17* years and the peak incidence is in the 4th (39.13%) andN1rd (21.N1) decades of life. Table (2).

TABLE 2: AGE DISTRIBUTION OF PATIENTS WITH SCC OF TONGUE

Age in years	No. of patients	Percentage
21-30	2	8.69%
31-40	5	21.7%
41-50	9	39.13%
51-60	4	17.39%
61-70	2	8.69%
71-80	1	4.34%
Total	23	100%

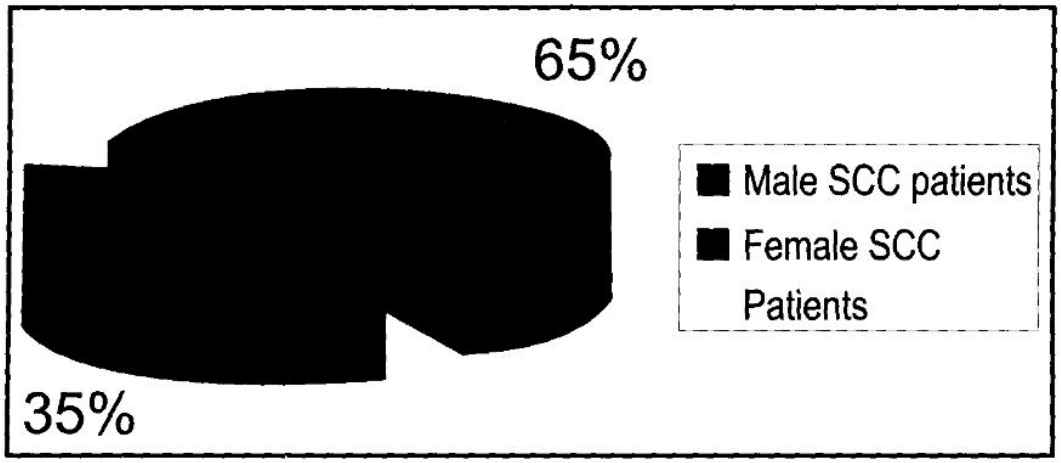

Fig. 1. Sex distribution of patients with Tongue SCC

TABLE 3: ANATOMICAL SITE DISTRIBUTION OF TONGUE SCC

Anatomical site	No of patients		Total
	Right	Left	
Posterior lateral border	5	7	12 (52.17%)
Anterior lateral border	3	5	8 (34.78%)
Ventral Surface	—	—	2 (8.69%)
Tip of the tongue	—	—	1(4.34%)
Dorsal surface	0	0	0 (0%)

TABLE 4: TNM STAGING OF PATIENTS WITH SCC OF THE TONGUE

TNM Staging	No. of patients	Percent-age
Stage I	2	8.69%
Stage II	4	17.39%
Stage III	10	43.47%
Stage IV	7	30.43%
61-70	2	8.69%
Total	23	100%

TABLE 5: HISTOPTHOLOGICAL GRADING OF PATIENTS WITH SCC OF THE TONGUE

Histopathological grading	No. of patients	Percent-age
GO	0	0%
G1	17	73.91%
G2	4	17.39%
G3	2	8.69%
G4	0	0%
Total	23	100%

GENDER

According to the present study SCC of the tongue was more common in males (65%) than females (35%), males to female ratio being 1.875. (Fig 1)

ANATOMICAL SITE DISTRIBUTION OF TONGUE

Posterio-lateral Border of the tongue (52.17%) has been the most common site for SCC. While tip of the tongue and ventrum of the tongue were involved the least they are not designated right or left in the table because of the central location of the tumour. None of the patient reported with SCC of the tongue involving the dorsum of the tongue. Table 3

TNM STAGING

Most of the patients reported very late in advanced stage i.e. Stage III (43.47%) and Stage IV (30.43%) respectively. Very few patients reported in stage I and II. Table 4

HISTOPATHOLOGICAL GRADING

Most of the tumours were well differentiated SCCs i.e. G1(73.91%) followed by moderately differentiated i.e. G2 (17.39%) and poorly differentiated i.e. G3 (8.69%) table 5.

DISCUSSION

Tongue is the most essential organ in the oral cavity it is responsible for moving the bolus of the food and liquid through the oral cavity into the mesopharynx. It assists in molding and beautifying the human voice.

Fig. 2. Early SCC of the Tongue (Anterio-Lateral Border)

Fig. 3. Advance SCC of the Tongue (Posterio-Lateral border of the tongue)

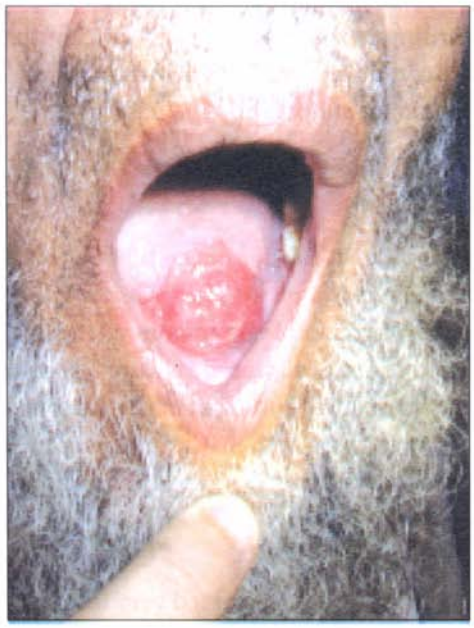

Fig. 4. SCC of the Ventral Surface of the Tongue (sever restriction of tongue movements)

Fig. 5. SCC of the Tip of the Tongue and Anterio-lateral border

Fig. 6. Hemiglossectomy a nightmare for the patient

It is a mass of highly specialized muscles, covered with epithelium, nourished by a rich blood supply through the lingual arteries and contains the sensibilities of taste and contact.[10°] Epidemiological data shows that carcinoma of the tongue constituted 0.8% of all cancers in men and .04% of all cancers in women in United States. Excluding lower lip, carcinoma of the tongue makes the largest single group constituting around 40% of all malignant tumours of the oral cavity." But the present study on 23 patients shows that SCC of the tongue is 15.43% of all the SCCs of the oral cavity reported during the study period. While a study from (Tallat Najeeb)[12] conducted in Pakistan

Institute of Medical Sciences (PIMS) shows that SCC of the tongue is 38.8% of the total cancers of the oral cavity. Carcinoma of the tongue clinically presents as ulceration, fungation (an exophytic mass), and infiltration with varying degree of induration. Patients rarely present with dysphagia or difficulty in speech. There is often a leukoplakic (white patch) or erythroplakic (red patch) component to the lesion and a small size does not exclude invasion.[13]

Carcinoma of the tongue has always been regarded as a disease that affects men more than females with the highest incidence occurring in the 6th to 8th decades of life. But in the present study SCC of the tongue has affected patients in their thirties and forties. Those below 20 years of age are rarely affected.[14] In England and Wales, between 1962-67 and 1980-84, registration of carcinoma of the tongue increased by 6.5% for men and 15.5% for women (10% overall increase) suggesting a changing epidemiological trend.[15] According to the present study SCC of the tongue is predominantly common in males as compared to females.

Due to aggressive tumour biology and with corresponding poor prognosis in younger age group (those below 40 years of age) the increasing incidence of SCC of the tongue in younger patients is extremely worrying.[15,16] 29.67% of patients were below 40 years and mean age 46.21 years according to the present study, both of these findings are alarming when it comes to prognosis. It is said that two third of the carcinomas of the tongue occur on the lateral and ventral surface of the anterior two third of the tongue, while only a quarter occur on the posterior third.[13] Contrary to this in (52.17%) the posterior lateral border of the tongue was involved, followed by anterior lateral border (34.78%).

According to the present study most of the patients with SCC of the tongue reported in advanced stage i.e. stage III and IV, the study is consistent with that of Lima DD, Formiga CC, and Lopes LA conducted in Brazil in 2003.[1]

The presence of lymph node metastasis is the most important prognostic factor in head and neck carcinoma. Survival rates may decrease by 50%, and the possibility of distant metastasis may increase when there is cervical node involvement.[18,19]Many methods are used to detect cervical lymph node metastasis clinically, and the imaging studies used include computed tomography, magnetic resonance imaging, ultrasound, and positron emission tomography. Despite negative imaging study, late cervical metastasis develops in some clinically N_o patients. The sensitivity of preoperative imaging by computed tomography or magnetic resonance imaging and clinical examination is only 70%, and there are no imaging studies capable of detecting micrometastasis in cervical lymph node. The current standard of care is to perform a neck dissection even in the clinically negative neck when the chance of occult metastasis exceeds 20%, but there is controversy as to whether patients with stage I and II oral tongue carcinoma should undergo elective neck dissection or not.[20°]

CC of the tongue is usually graded by the histopathologists on its degree of differentiation into well, moderate, poor and undifferentiated squamous cell carcinoma. This is of use for oral oncologists and surgeons because there has been a correlation between histopathology and prognosis. This finding has got a great bearing on prognosis and 5 year survival because the prognosis for poorly differentiated and undifferentiated tumours is poor as compared to well differentiated tumours. According to a study conducted in the same hospital by the first author on the histopathology of oral squamous cell carcinoma in (niswar) snuff dippers, 67.5% of the tumours were well differentiated.[21]For the tongue it is getting even better according to the present study i.e. 73.91% of the tumours were well differentiated. Unfortunately like other oral sites, SCC of the tongue is reported at a late stage (stage III and IV) when it comes to clinical staging, making the prognosis and five years survival poor. Silent (painless) nature of the disease, difficult examination (lesion in the posterior one third of the tongue), low socioeconomics, lack of dental motivation, bad oral hygiene and professional delay (lack of properly trained dental professionals in the far flung areas of the province) are the various factors responsible for late presentation of this deadly tumour.

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