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Original Research Article

A retrospective study of correlation of tumour thickness with nodal spread in anterior tongue cancer

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ABSTRACT

Background: Squamous cell carcinoma (SCC) of the oral tongue is characterized by a high propensity for cervical nodal metastasis, which affects the probability of regional control and survival. Many histopathologic parameters in tongue squamous cell carcinoma have been identified as predictive factors for cervical metastasis. Several studies focused on tumor thickness, and the depth of invasion was suggested to have a relationship to the occurrence of cervical metastasis.
Methods: The medical records of 134 primary tongue carcinomas operated without any preoperative therapy. Author conducted a retrospective study of anterior tongue cancer cases operated at the institute in the department of surgery between April 2012 till March 2017 and studied the correlation between tumour thickness and nodal spread. Each patient's tumor type, tumor location, tumor size, invasion mode, depth of invasion, intralymphatic tumor emboli, and perineural invasion were evaluated.
Results: The overall cervical metastatic rate was 56.71%. In the group in which tumor depth exceeded 5mm, the metastatic rate was 77.77% (70/90). In contrast, when the depth of invasion was less than 5mm, the incidence of cervical metastasis was 13.63% (6/44). Clinically negative necks turned out pathologically positive in 28.39%.
Conclusions: It was observed that there is a discerning point at 5mm of tumor depth at which cervical metastasis is probable. Elective neck therapy (surgery or irradiation) is strongly indicated for tumors exceeding 5mm invasion.

Keywords: Carcinoma, Neck dissection, Tongue

INTRODUCTION

Oral squamous cell carcinoma (OSCC) represents 95% of all forms of head and neck cancer, and during the past decade its incidence has increased by 50%.[1] Tongue cancer is one of the most common cancers of the oral cavity in India having incidence rate of 9.4/100,000/year.[2] The incidence rate varies according to age, sex, dietary habits, and race. The tongue cancer is prevalent in India due to widespread tobacco abuse, human papilloma virus, Epstein-Barr virus, Plummer Vinson syndrome, metabolic polymorphism, etc., Snuff and alcohol consumption are associated with 90% of patients that exhibit oral cancer and the two factors appear to have a synergistic effect.[3,4] The histopathological type is predominantly squamous cell carcinoma (SCC).[5] The overall current estimates of age standardized incidence and mortality being 6.6/100,000 and 3.1/100,000 in men and 2.9/100,000 and 1.4/100,000 in women, respectively.[6] The survival rates for patients of oral cancer reaches only up to 30% in developing countries when compared to 54% in developed countries.[7] The poor survival in developing countries may be attributed to the presentation of patients in advanced stages, delayed diagnosis, and treatment with poor compliance to treatment. The treatment modalities

available for oral cancer are surgery, radiotherapy (RT), chemotherapy (CT), and combined modalities.[8] These procedure leads to significant morbidity as tongue is involved in swallowing, speech, and breathing.

METHODS

This is a retrospective clinico-epidemiological study of the carcinoma tongue conducted on 134 patients operated in the department of surgery at GCS Medical College Hospital and Research centre, Ahmedabad, India from 2012 to 2017. The patients with a confirmed diagnosis of Carcinoma tongue operated without any preoperative therapy were included in the study.

Inclusion criteria

- Patients having primary anterior tongue cancer
- Operated in the hospital without any neoadjuvant chemotherapy

Exclusion criteria

- Patients having tongue cancer that extends into posterior part
- Patients undergoing neoadjuvant chemotherapy

Detailed data from the case files were collected and compiled for further analysis. The data analyzed were most common age group of presentation, gender preponderance, most common stage at presentation along with the most common histopathological type with the most common grade. Author assessed the nodal involvement at presentation as well as on histopathology. Only operated cases without preoperative chemo or radiotherapy were selected.

RESULTS

here were 134 cases operated with a diagnosis of anterior tongue cancer over a period of 5 years. Detailed analysis is shown in Table 1. The mean age of diagnosis was 52.7 years, ranging between 25 and 78 years. Most of cases (72%) were in between 30 and 60 years with most cases reported in the fifth decade (27%). The male: female ratio in this study was 6.1:1. In the majority of cases anterior 2/3 of the tongue was involved. The neck nodes were found to be palpable clinically in 39.55% (53/134) of cases at presentation. Around 80 cases (59.70%) presented at an advanced tumor stage, mainly in Stage III (47.76%) at first visit. Only 25 cases (20%) were in early stages and only 3% presented at Stage I. In almost all age groups, the presentation was in advanced stages. Histopathologically all cases were SCCs. When divided according to tumor grades, 48 cases (39.7%) belonged to Grade I, 39 cases (32.2%) belonged to Grade II, 29 cases (24.0%) were of Grade III histology and no grading were mentioned in five cases (4.1%). Of 134 cases, 93 underwent wide excision with supra omohyoid neck dissection (SOHND) (69.4%) followed by hemiglossectomy with modified radical neck dissection 32(23.88%). There were 9 cases, which underwent hemimandibulectomy with PMMC reconstruction (6.07%).

Table 1: Analysis of demographic and histopathological characteristics of anterior tongue cancer patients.

Characteristics	No. of patients (n=134)
Sex distribution	
Male	115(85.8%)
Female	19(14.17%)
Age distribution	
21-30	3(2.23%)
31-40	32(23.88%)
41-50	25(18.65%)
51-60	34(25.37%)
61-70	24(17.91%)
71-80	16(11.94%)
Tumour location	
Anterior 2/3rd	134
Right lateral	78(58.2%)
Left lateral	54(40.29%)
Tip of tongue	2(1.49%)
Nodal status clinically	
Positive	53(39.55%)
Negative	81(60.44%)
Nodal status histopathology	
Positive in clinically negative cases	23(28.39%)
Histopathology types	
Squamous cell carcinoma	131(97.76%)
Mucoepidermoid carcinoma	2(1.49%)
Verrucous carcinoma	1(0.75%)
Staging	
I	16(11.94%)
II	38(28.35%)
III	64(47.76%)
IV	16(11.94%)
Histopathology grade	
I	52(38.8%)
II	41(30.59%)
III	34(25.37%)
Not specified	7(5.22%)
Tumour thickness	
>5mm	90
<5mm	44
Nodal metastasis in relation to tumour thickness	
>5mm	70/90 (77.7%)
<5mm	6/44 (13.63%)

Cervical nodal metastasis was found in 70 of 90 patients having tumour thickness more than 5mm, whereas 6 patients with tumour thickness less than 5mm had nodal metastasis. Tumour thickness exceeding 5mm was statistically significantly correlated with cervical

metastases. The present study indicates that the thickness of primary tumour has a strong predictive value for occult cervical metastasis. Thus, elective neck treatment (surgery or irradiation) is indicated for tumours exceeding 5mm thickness.

DISCUSSION

The tongue is very commonly affected part in the oral cavity. In a review article by Coelho, the incidence of Ca tongue increased with the age and there was a lower incidence in females as compared to males in all age groups.[9] Lam et al. performed an epidemiological review of site of lesion in 611 cases of tongue carcinoma over a period of 24 years.[10] In the specified sites tip and the lateral border of the tongue was involved in 25% of cases, followed by involvement of the base of the tongue in 18% of cases. In present study, there was a predominance of right lateral tongue border involvement, which could be explained by tobacco chewing habits in the country. Huang et al. did a comparative retrospective study in early cT1 and cT2 oral cancers and found that incidence of node positivity was 5.2% and 14.6%, respectively.[11] They also concluded that level I/II nodes were most common sites for occult metastasis in patients with elective neck dissection and recurrences in patients. The skip metastasis to level IV nodes is rare in early stage cancers.[11] In present study, the clinical nodal status was positive in the many of cases, at presentation. Durazzo et al, reported around 50% cases presented with clinically Stage IV lesions and the staging didn't change significantly after pathological examination.[12] Similar findings of delayed presentation also noted in present study. This finding can be attributed to delay in seeking professional help due to lack of awareness, delay in diagnosis and delay in referral to tertiary health care setup.

The treatment of oral tongue cancer requires a multidisciplinary approach. The main aim of treatment is tumor eradication, recurrence prevention and conservation and/or restoration of form and function of the tongue. The choices of treatment are surgery (which includes local resection with or without neck dissection), RT, CT or combined modalities. Hicks et al, concluded in their study that locoregional control in patients with SCC of the oral tongue can be achieved with primary surgical therapy, after the results of 79 cases that were treated by surgery alone.[13] Adequate margins are crucial to local control otherwise recurrences are common. Salvage neck dissection may result in long-term survival for patients with regional relapse. Due to the high rate of occult disease (41%), they recommend prophylactic treatment of regional lymphatics for primary clinical disease of T2 or greater. Huang et al advised elective neck dissection for all cT1 and cT2 cases even in the presence of nodes negative neck by computed tomography scan and magnetic resonance imaging.[12] They concluded that SOHND is sufficient to remove the majority of lymph node metastases in early stage tongue cancers. In their study elective neck dissection and tumor stage were independent predictors of neck control rate and overall survival. The surgery itself should include tumor resection with neck dissection for adequate tumor removal. In present study neck nodes were found to be positive in 77.77% of the cases with tumour depth >5mm while the node positivity fell to 13.63% in cases where tumour depth <5mm. Various clinical studies have been performed to correlate the depth of tumour invasion with the likelihood of cervical nodal metastasis.[14-16] These studies reveal that the single most important factor in predicting lymph node metastasis is the depth of tumour invasion.

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