Original Research Article

Prognostic factors of lymphnode metastasis in sqaumous cell carcinoma tongue

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Abstract

Introduction-The most important prognostic factor for squamous cell carcinoma (SCC) of oral tongue like any other HNSCC is the status of cervical lymph nodes. **Objectives-** The aim of the present study is to study the clinical and histopathological factors to assess the risk of cervical lymph node metastasis in squamous cell carcinoma tongue. **Methods-**a prospective clinical study, done at MNJ Institute of Oncology and Regional Cancer Centre, Hyderabad, Telangana, a tertiary referral centre for management of cancer patients in the state. From a period from January 2018-December 2019.Wide local excision with minimum of 1 cm 3–dimensional margin or hemiglossectomy is done depending upon the site of the primary. Analysis was done by SPSS (Version 25.0) and chi-square was used as test of significance. **Results-** the mean age was 45.44 years. The study was male preponderance where males comprise 69% and most of them belonged to T2 tumour staging but the association was not significant.males showed 31% positive lymph nodes and 69% negative lymph nodes, but the association was not significant. (p>0.05). Females were having 36% of more positive lymph nodes.the most common surgery performed for primary, and neck was wide excision seen in 97% of patients.Though most patient's has tumour size between 2cm-4cm (71%) but the association was not significant.Clinical stage N0 was the most common seen in 79% of patients followed by N1. But positive pathological node was only 17% in N0, and 57% in N1. **Conclusion-** The incidence of cervical lymph node spread in carcinoma tongue in our studyis 32.2%. Tumour stage T2 and T3 are significant risk factors for lymph node metastases. Tumour grade is a risk factor for lymphnode metastasis.

Keywords- oral cancer, squamous cell carcinoma, wide excision, hemiglossectomy, metastasis, tumour staging, prognosis

Introduction

Cancer of the oral tongue is one of the most common sites of Head and Neck Squamous Cell Carcinoma (HNSCC) with a rich propensity for cervical lymph node metastases. The most important prognostic factor for squamous cell carcinoma (SCC) of oral tongue like any other HNSCC is the status of cervical lymph nodes[1,2,3]. Cure rates drop by 50% with involvement of regional lymph nodes.The rate of occult metastasis in clinically negative neck for oral tongue cancers ranges from <20% to >30% depending on many predictors. Treatment failure in ipsilateral neck is a significant problem. The salvage rate for patients developing clinically positive lymph nodes with the primary lesion controlled is only 50-60%[4,5].

Debate continues in the literature regarding the appropriate therapy for the N0 neck. Whilst evidence exists that treatment of cervical metastases in a clinically occult stage will improve regional control & possibly survival, universal elective treatment of the N0 neck in all cases would imply unnecessary treatment & morbidity for those without cervical metastases. However, a policy of observation without treatment for all N0 necks may delay diagnosis of the metastatic disease until a more advanced stage is reached, with poorer prognosis [6,7].

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Several controversies also relate to appropriate treatment of the N0 neck – surgery or RT and the extent of surgery[8]. The controversy is further compounded by the limitations of current imaging modalities which offer only approximately 70- 80% accuracy for the detection of cervical metastatic disease.With this background, the aim of the present study is to study the clinical and histopathological factors to assess the risk of cervical lymph node metastasis in squamous cell carcinoma tongue.

Materials and Methods

This was a prospective clinical study, done at MNJ Institute of Oncology and Regional Cancer Centre, Hyderabad, Telangana, a tertiary referral centre for management of cancer patients in the state. From a period from January 2018-December 2019.

Inclusion criteria

Patients with biopsy proven Squamous cell carcinoma tongue which were operable.

Exclusion criteria

Non squamous cell carcinomas, Recurrent tumors, Post radiotherapy cases, History of prior neck dissection were excluded.

Methodology

Wide local excision with minimum of 1 cm 3–dimensional margin or hemiglossectomy is done depending upon the site of the primary. MRND type III is done unless the nodal disease warrants removal of SAN, IJV or SCM for oncological clearance.

The pathologist is informed about the preoperative, intraoperative details of the case and specimens handed over.

Protocol followed

1. Selection of patients as per inclusion criteria.
2. Informed consent.
3. Clinical examination, diagnostic and staging investigations and surgical work-up.
4. USG Neck for all patients.
5. Meticulous cervical lymph node dissection.
6. All nodal levels separately marked and sent to lab in separate sample bottles.
7. Postoperative care.
8. Predictors of lymph node metastases evaluated- Tumour size, Tumour site, Tumour thickness, Lymphovascular invasion and perineural invasion, Tumour grade

The protocol for the study was approved by the Ethics Committee in Osmania Medical College as well as in KNR University of Health Sciences.

Statistical Analysis

The data analysis was conducted using IBM SPSS Statistics for Windows, Version 25.0 software (IBM Corp., Armonk, NY, USA). Descriptive statistics (periodicity, percentage, mean, SD) were calculated, and a chi-squared (2) test was used to compare qualitative data. The distribution was evaluated with the Kolmogorov-Smirnov and Shapiro-Wilk tests. An independent samples t-test was used to compare normally distributed data of independent groups. A p value <0.05 was considered significant and indicated a difference between groups.

Results

Table 1: Sex differentiation as per Tumour Staging

SEX	T1	T2	T3	Total
MALE	17(27%)	36(58%)	9(15%)	62(69%)
FEMALE	13(46%)	12(43%)	3(11%)	28(31%)
TOTAL	30(33%)	48(53%)	12(14%)	90(100%)

Chi square 3.137 ; p value 0.208(not significant)

As per table 1 the study was male preponderance where males comprise 69% and most of them belonged to T2 tumour staging but the association was not significant. (p>0.05). females were 31% and 46% of them belonged to tumour stage 1.

Table 2:Sex Distribution and Lymph Node positivity

SEX	POSITIVE LYMPH NODES	NEGATIVE LYMPH NODES
MALES	19(31%)	43(69%)
FEMALES	10(36%)	18(64%)

Chi square 0.227; p value 0.634(not significant)

As per table 2 the study was male preponderance where males showed 31% positive lymph nodes and 69% negative lymph nodes,but the association was not significant. (p>0.05). Females were having 36% of more positive lymph nodes.

Table 3:Predisposing Factors, Addictions and Lymph Positivity

RISK FACTORS	Positive Ln	Negative Ln	No. Of Patients
TOBACCO	14(33%)	29(67%)	43(48%)
ALCOHOL	7(37%)	12(63%)	19(21%)
PREMALIGNANT CONDITIONSAND LESIONS	9(56%)	7(44%)	16(18%)

Chi square 0.217; p value 0.614(not significant)

As per table 3 the study 48% of patients has tobacco addiction with 33% had positive lymph nodes, similarly 21% had alcohol addiction with 37% had positive lymph nodes but this association was not found to be significant. (p>0.05).

Table 4: Surgery for Primary and Neck

SURGERY	NO.OF PATIENTS
LEFT HEMIGLOSSECTOMY	2(2%)
RIGHT HEMIGLOSECTOMY	1(1%)
WIDE EXCISION	87(97%)
TOTAL	90

As per table 4 the most common surgery performed for primary and neck was wide excision seen in 97% of patients.

Table 5: Tumour Size and Lymph Node positivity

TUMOR SIZE	POSITIVE LYMPH NODES	NEGATIVE LYMPH NODES	NUMBER OF PATIENTS
<2CM	3(14%)	18(86%)	21(23%)
>2CM-4CM	24(37%)	40(63%)	64(71%)
>4CM	2(40%)	3(60%)	5(6%)
TOTAL	29	61	90

Chi square 4.048; p value 0.132(not significant)

As per table 5 association between tumour size and lymph node positivity was not significant (p>0.05). Though most patient's has tumour size between 2cm-4cm (71%) but the association was not significant.

Table 6: Tumour Grade and Lymph Node Positivity

HISTOLOGICAL GRADE	LYMPH NODE POSITIVE	LYMPH NODE NEGATIVE	TOTAL NO.OF PATIENTS
POORLY DIFFERENTIATED	2(100%)	0	2(2%)
MODERATELYDIFFERENTIATED	11(44%)	14(56%)	25(27%)
WELL DIFFERENTIATED	16(25%)	47(75%)	63(70%)
TOTAL	29	61	90

Chi square 4.048; p value 0.03*(significant)

As per table 6 well differentiated histological grade seen in 70% of patients followed by 27% in moderately differentiated and this association was found to be significant (p<0.05).

Table 7: Relation between lymph node positivity and site of tumour

SITE	LYMPH NODE POSITIVE	LYMPH NODE NEGATIVE	TOTAL
LEFT LATERAL BORDER	18(33%)	36(67%)	54(60%)
RT DORSAL SURFACE	1(100%)	0	1(1%)
RT LATERAL BORDER	9(27%)	24(73%)	33(37%)
RT VENTRAL SURFACE	1(100%)	0	1(1%)
MID VENTRAL SURFACE	0	1(100%)	1(1%)

Chi square 3.048; p value 0.01*(significant)

As per table 7 the most common site for tumour was left lateral border (60%) followed by right lateral border (37%) with significant lymph node positivity. Cases seen in other site also but they were less.

Table 8: Relation between clinical nodal and pathological nodalstatus

CLINICAL NODAL STATUS	PATHOLOGICAL NODE POSITIVE	PATHOLOGICAL NODE NEGATIVE	TOTAL
CLINICAL N0	12(17%)	59(83%)	71(79%)
CLINICAL N1	16(57%)	2(43%)	18(20%)
CLINICAL N2A	1(100%)	0	1(1%)

Chi square 4.148; p value 0.001*(significant)

As per table 8 both clinical and pathological nodal status has very high significant association. (p<0.05). Clinical stage N0 was the most common seen in 79% of patients followed by N1. But positive pathological node was only 17% in N0, and 57% in N1.

Discussion

The role of elective treatment to the clinically negative neck in oral cavity SCC remains unresolved. The most frequent cause of treatment failure following surgical removal of oral tongue cancer is regional recurrence. Although it has been shown that patients withadvanced oral tongue cancers staged T3/T4N0 benefit from elective neck dissection, appropriate treatment of T1/T2N0 tumors seems undetermined. Anil D cruz et alhas shown that there is overall survival benefit in patients with clinically N0 neck with elective neck dissection.The status of neck lymph nodes remains the most important prognosticator of the clinical course of oral tongue cancer. Assessment of the clinical and histopathologic factors studied here enables a more informed decision addressing elective neck treatment than does presurgical evaluation of early N0 oral tongue cancers. This study identifies clinical and histopathologic factors that, in combination, can more reliably predict those most likely to benefit from elective neck treatment[9]. Tumor thickness, tumor cell differentiation and pattern of tumor invasion are significant correlates of neck metastases. Our study is a series of 90 patients with carcinoma tongue, evaluated preoperatively by clinical examination and ultrasound neck. All the patients were treated surgically. Primary tumor was treated by wide excision in 87 patients and one patient had left hemiglossectomy and another patient had right hemiglossectomy.

In our study there were 62 (69%) male patients and 28(31%) female patients. Among male patients, 17(27%) patients had T1 stage,36(58%) patients had T2stage, 9(15%) patients had T3 stage. Among female patients 13(46%) patients had T1 stage, 12(43%) patients had T2 stage and 3 (11%) patients had T3 stage. Out of 62 malepatients 19(31%) patients had pathologically positive lymph nodes, out of 28 female patients 10(36%) patients has positive pathological lymph nodes. The p value (0.634) is not significant in our study. The results are comparable to study of J. wooglar et al and A.hosa et al in which there is no significance between sex and lymph node positivity. Hence sex is not a risk factor for lymph node metastases[10,11].In this prospective study of 90 cases of carcinoma tongue analyzed. Smallest tumor size reported is 0.5 cm and largest tumor reported is 7cms. Twenty one (23%) patients had tumor size less than 2cm, 64 (71%) patients had tumor size between 2-4 cm, 5 (6%) patients had tumor size more than 4 cm. Three (14%) patients of tumor size less than 2cms ,24(37%) patients of tumor size between 2 to 4cms and 2(40%) patients of tumor >4 cms had positive lymph nodes. The calculated p value for correlation between tumor size and lymph node positivity is 0.132, which is statistically not significant. In our study majority of patients had tumor size between 2-4 cm. Only 5 patients had tumor size more than 4 cm. Byers et al and Sparano et al in their studies described the correlation between increasing tumor size and lymph node metastasis, but our study differs probably because of small number of patients with tumor size>4cm[12,13].

Of 90 patients in our study 43 (48%) patients had history of tobacco chewing, 19(21%) patients had history of alcohol intake. Of 43 patients with history of tobacco chewing 14 (33%) patient had positive lymph nodes. Of 19 patients with alcohol intake 7 (37%) patients were lymph node positive. The odds ratio for tobacco and alcohol in our study were 1.09 and 1.29. P value is >0.05,which is statistically not significant.

Out of 90 patients 54(60%) patients had tumor at left lateral border of which 18(33%) patients were node positive and 36(67%) patients were node negative. 33(37%) patients had tumor on the right lateral border of which patients 9(27%)were node positive and 24(73%) patients were node negative.One patient had tumor on the right dorsal surface , one patient had tumor on right ventral surface , both were positive for lymph node metastases.One patient had tumor in the mid ventral surface with pathologically negative lymph node. Majority of the patients in our study are confined to right and left lateral border. Hence correlation cannot be made out between tumor location and lymph node metastases. Yonghang et al ,studies showed the significance of tumor location and level of lymph node metastases

Conclusion

The incidence of cervical lymph node spread in carcinoma tongue in our studyis 32.2%. Tumour stage T2 and T3 are significant risk factors for lymph node metastases.Tumour thickness >5 mm is a significant risk factor for lymph node metastases.Infiltrative morphology of tumour is a significant risk factor for lymph node metastases. Tumour grade is a risk factor for lymphnode metastasis.

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