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RESEARCH ARTICLE

PREDICTORS OF LYMPHNODE METASTASIS IN SQAUMOUS CELL CARCINOMA TONGUE

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Abstract

Back Ground: The most important prognostic factor for squamous cell carcinoma (SCC) of oral is the status of cervical lymph nodes. Cure rates drop by 50% with involvement of regional lymph nodes. 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.
Methods: The relationship clinical and histologic features of the primary tumor of tongue and metastasis to neck nodes was investigated in 90 patients.
Results: Histopathologic features of primary tumor showed significant differences in relation to metastasis to neck nodes
Conclusion: Tumor stage ,grade. vascular and perineural invasion,morphology ,tumor thickness are important predictors in predicting metastasis to neck nodes.

Introduction:-

The most important prognostic factor for squamous cell carcinoma (SCC) of oral is the status of cervical lymph nodes. Cure rates drop by 50% with involvement of regional lymph nodes. 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 30% depending on many predictors. Several controversies also relate to appropriate treatment of the N0 neck – surgery or RT and the extent of surgery

Aim:
To assess the risk of cervical lymph node metastasis in squamous cell carcinoma tongue

Materials And Methods:-

Study period: January 2018-December 2019Hospital: MNJ Institute of Oncology & Regional Cancer Centre. Patients with biopsy proven Squamous cell carcinoma tongue which were operable are included in the study and patients with Non squamous cell carcinomas, Recurrent tumors,Post radiotherapy cases ,History of prior neck dissection are excluded

Results:-

Tumor Size

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

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than 2cms ,24(37%) patients of tumor size between 2 to 4cms and 2(40%) patients of tumor >4 cms had positive lymph nodes

Tumor Stage:
Out of 90 patients in our study, 30(33%) patients had stage t1, 48(53%) patients had staget2, and 12 (14%) patients had staget3. in patients with t1 stage only 3 (10%) patients had positive lymph nodes. among patients with t2 stage, 16 (33%) had positive lymph nodes & t3 stage 10 (83%) had positive lymph nodes

Tumor size	Positive lymph nodes	Positive 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

Tumor Stage:
Out of 90 patients in our study, 30(33%) patients had stage t1, 48(53%) patients had staget2, and 12 (14%) patients had staget3. in patients with t1 stage only 3 (10%) patients had positive lymph nodes. among patients with t2 stage, 16 (33%) had positive lymph nodes & t3 stage 10 (83%) had positive lymph nodes

STAGE OF TUMOUR	POSITIVE LYMPH NODES	NEGATIVE LYMPH NODES	NUMBER OF PATIENTS
T1	3(10%)	27(90%)	30(33%)
T2	16(33%)	32(67%)	48(53%)
T3	10(83%)	2(17%)	12(13%)
TOTAL	29	61	90

Tumor Thickness:
Of the 90 cases in our study 12(13%) patients had tumor thickness >1cm, 36(40%) patients had tumor thickness between 0.5 to 1 cm, and 42(47%) patients had tumor thickness< 0.5 cms. Of the 12 patients with tumor depth >1cm,10 (83%)patients had histopathological confirmation of lymph node involvement. Of the 36 patients with tumor thickness between 0.6 to 1cm 13(36%) had positive lymph nodes. Of the 42 patients with tumor depth < 0.5 cm 6 (14%) patients had positive lymph nodes.

TUMOR THICKNESS	POSITIVE LYMPH NODES	NEGATIVE LYMPH NODES	NUMBER OF PATIENTS
≤5MM	6(14%)	36(86%)	42(47%)
6MM-1CM	13(36%)	23(64%)	36(40%)
>1CM	10(83%)	2(17%)	12(13%)
TOTAL	29	61	90

Grade Of The Tumor:
Out of 90 patients 63(70%) patients had well differentiated squamous cell carcinoma, 25(27%) patients had moderately differentiated squamous cell carcinoma and 2(2%) patients had poorly differentiated carcinoma. Out of 63 patients with well differentiated carcinoma 16(25%) patients had pathologically positive lymph nodes and 47(75%) patients had negative lymph nodes .Out of 25 patients with moderately differentiated carcinoma 11 (44%) patients had pathologically positive nodes ,14 (56%)patients were pathologically node negative

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

Morphology Of Tumor:
Out 90 patients, 34(38%) patients had infiltrative pattern and 56 (62%) patients had ulceroproliferativepattern.Of 34 patients with infiltrative pattern 21 (62%)patients had positive lymph nodes ,13(38%) patients had negative lymph nodes .Of 56 patients, 48(86%)had negative lymph nodes and 8(14%) patients had positive lymph nodes

GROWTH PATTERN	LN POSITIVE	LN NEGATIVE	LN NEGATIVE
INFILTRATIVE	21(62%)	13(38%)	34(38%)
ULCEROPROLIFERATIVE	8(14%)	48(86%)	56(62%)
TOTAL	29	61	90

Correlation Between Lvi And Lymph Node Positivity:
Of 90 patients 11(12%) patients had lymphovascular invasion present in the tumor. Out of 11 patients who had LVI positivity, all had pathological lymph node positivity

LVI	LN POSITIVE	LN NEGATIVE	TOTAL
POSITIVE	11(100%)	0	11(12%)
NEGATIVE	18(23%)	61(77%)	79(88%)
TOTAL	29	61	90

PNI	LN POSITIVE	LN NEGATIVE	TOTAL
POSITIVE	12(92%)	1(8%)	13(14%)
NEGATIVE	17(22%)	60(78%)	77(86%)
TOTAL	29	61	90

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 with advanced oral tongue cancers staged T3/T4N0 benefit from elective neck dissection, appropriate treatment of T1/T2N0 tumors seems undetermined. Anil D cruz et al1 has 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 histopathologicfactors that, in combination, can more reliably predict those most likely to benefit from elective neck treatment. 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 .Average number of lymph node yield per patient is 18.2. Out of 90 patients 29(32%) patients had pathologically positive nodes.

Tumor Size:

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 al2 and Sparano et al3 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

Tumor Stage:

The p value is 0.0001 which is highly significant, indicating correlation between tumor stage & lymph node positivity .Our results correlate with other studies of Saedi B et al,4Tokiookasi et al5 ,A.S Hosal et al 6&kurokowa et al7 ,nityaet al8 ,Yohonghong et al 9 ,j.wooglaret al10 studies which showed significant relationship between tumor stage and lymph node metastases. Hence according to our study tumor stage is a significant risk factor for lymph node metastases.

Correlation Between Lvi And Lymph Node Positivity:

The p value is<0.05which is statistically significant.Our study is comparable to studies of j.wooglaretal10 ,sparano et al3 in which there was statistical significance between LVI and lymph node positivity. Instudies of A.S Hosal et al6 ,yonghong et al9. there was no significance between LVI and lymph node metastases . According to our study LVI is a significant risk factors for lymph node metastases.

Correlation Between Pni And Lymph Node Positivity:

The p value is<0.05which is statistically significant. Our study comparable to studies of j.wooglaretal10 ,sparano et al3 in which there was statistical significance between PNI and lymph node positivity. In studies of A.S Hosal et al6 ,yonghong et al9 there was no significance between PNI and lymph node metastases . According to our study PNI is a significant risk factor

Tumor Thickness:

The p value is 0.0001 which is statistically significant. Our study results are consistent with results of other studies sparano et al3 ,kurkowa et al7 ,nitya et al8 ,hosal et al 6 ,yonghang et al9 ,j.wooglar et al 10 ,Michael j.venesse et al11,Cs Neena et al12.In all these studies there is strong correlation between tumor thickness and involvement of lymph nodes. Using ≤ 3-mm versus >3-mm thickness Yuen et al13 reported metastases of 8% versus 50%. Using 4 mm as the threshold, Kurokawa et al7 reported the difference in nodal relapse as 2.9% (< 4 mm) versus 37.5% (≥ 4 mm) in 50 ,T1/T2 patients treated. Byers et al2 and Asakageetal 14also identified a threshold thickness of 4 mm. Others such as Oguret al15 and Fukanoet al16 suggested 5 mm as a threshold thickness. In contrast, Spiro et al 17identified 2 mm as a threshold thickness with a 12% rate of regional relapse (< 2 mm) compared to 47% (≥2 mm). Hence tumor thickness is significant factor lymph node metastases in our study.

Morphology Of Tumor:

The p value for our study is 5 mm is a significant risk factor for lymph node metastases. 5. Infiltrative morphology of tumor is a significant risk factor for lymph node metastases.

Conclusions:-

1.The incidence of cervical lymph node spread in carcinoma tongue in our study is 32.2%
2. The risk of occult nodal metastases in our study is 16.9%
3. Tumor stage T2 and T3 are significant risk factors for lymph node metastases.
4. Tumor thickness >5 mm is a significant risk factor for lymph node metastases.
5. Infiltrative morphology of tumor is a significant risk factor for lymph node metastases.
6. Lymphovascular invasion and perineural invasion are significant risk factors for lymph node metastases.
7. Tumor grade is a risk factor for lymphnodemetastases

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