Original Research Paper

Volume-10 | Issue-2 | February - 2020 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

General Surgery

STUDY OF NECK NODE METASTASIS IN ORAL CAVITY CANCERS

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ABSTRACT

Aim & objectives : The objective of this study was to analyse the neck node metastasis pattern and clinical factors in oral cavity cancer patients

Materials and Methods: In total, 57 patients (36 males, 21 females) were selected with oral squamous cell carcinoma with no history of previous malignancies and who were not undergoing neoadjuvant concomitant chemoradiotherapy or radiotherapy were selected for analysis.

Conclusion: Neck node metastasis was significantly related to tumor size and distant metastasis during follow-up

KEYWORDS : Oral neoplasms, Lymph nodes, Metastasis, Squamous cell carcinoma.

INTRODUCTION

The oral cavity is the most common site of malignant tumors of the head and neck . Squamous cell carcinoma is the most common malignant tumor type in the oral cavity cancers . Patients having oral squamous cell carcinoma (OSCC) have poor prognosis. Squamous cell carcinoma (SCC comprises approximately 80% of cancers of oral cavity.[1]

Even with small tumors (T1 and T2) there is a high risk of metastasis to cervical lymph node. So treatment of oral cancer remains controversial, especially for treatment of N0 neck patients. More than 30% of Oral squamous cell carcinoma patients with clinically N0 neck have occult metastasis. Metastasis to cervical region is the most important prognostic factor, as it affects survival rate by half.[2]

Multiple studies have proved that elective neck dissection (END) is more usefull than the "wait and see" method in terms of survival rate. END increases disease-free survival (DFS) and reduces the relapses and improving overall survival (OS)[3]. There are many radiological investigations for detecting cervical metastasis.

The specificity and sensitivity values range from 75% to 82% and 40% to 68%, respectively, for CT. from 75% to 82% and 50% to 58% and for ultrasounography ; from 82% to 92% and 55% to 80% for magnetic resonance imaging (MRI) ; and from 82% to 96% and 57% to 79% PET-CT. Thus, a single radiological investigation cannot be used for identifying cervical lymph node metastasis.

Surgical treatment for the neck include elective neck dissection (END) at the time of primary excision of tumor or therapeutic neck dissection during observation when cervical node metastasis occurs during followup period . Some studies have demonstrated that the neck node (N) category; size, number, and location of positive lymph nodes for metastasis ; and extracapsular spread presence increase the possibility of distant metastatic spread. and reduce Disease free survival rate. Elective neck dissection at the time of primary surgery for tumor resection was found to reduce loco-regional spread by 92% compared with the observation method[4]. On the other hand, few studies have found no significant difference in DFS and OS between the END group and the observation group.In one study, nodal recurrence was reported for 35% of patients in the observation group Selective neck dissection alone is enough for treating oral cancer patients with N0 neck, even though nodal micrometastases might be missed histopathologically. In patients with N+ neck, selective neck dissection and adjuvant radiotherapy is advised for better nodal control. Many patients in the observational group will require modified radical neck dissection (mRND) later when neck node metastasis occurs during follow-up period , and mRND is associated with higher morbidity in post operative period. so, END has been found have better survival and disease free period than the observational approach, which is usually associated with surgical morbidity. In the management of tongue cancers, in stages I and II, late cervical lymph node metastasis is a major issue due to the presence of occult metastasis . However, there is a lack of prospective studies demonstrating the benefits of elective neck dissection over therapeutic neck dissection.

The purpose of this study was to analyse the neck node metastasis pattern and related clinical factors in oral cavity cancer patients. The clinical factors that correlated with neck node metastasis in oral cavity cancer and the association of occult metastasis with different subsites were evaluated in this study.

MATERIALS AND METHODS

This is retrospective study included patients who were treated at the Department of surgical oncology and general surgical department NRI medical college, chinnakakani from January 2018 to November 2019. The inclusion criteria were:

1) Patients who had histopathologically proven invasive OSCC and who underwent neck dissection at the time of primary tumor resection.
2) Patients with no previous history head and neck cancer for were included in the study.

Clinical examination and radiological investigations like CT scan or MRI or PET-CT is done to evaluate tumour size, location and lymph nodal involvement . Primary tumors were removed with a safety margin greater than 1 cm. Either supra omohyoid neck dissection (SOHND) with removal of level I, II, III or modified radical neck dissection (level I, II, III, IV, V) was performed, depending on neck involvement and tumor size.

Patients who had positive nodes, whose invasion depth greater than 10mm or whose safety margins were less than 4mm adjuvant radiotherapy was given and according to patients condition it is initiated between 4-8 weeks in after surgery. Radiation Dose of 60-70 Gy is given in total.

Variables:

1. Presence of occult metastasis
2. correlation between neck nodal metastasis and T stage.
3. correlation between neck nodal metastasis and distant metastasis.

Follow up :

once in every four weeks for the first six months and once in every six weeks for the next six months.

Fisher's exact test were used to analyze the categorical dichotomized variables and relationships.

RESULTS

In total, 57 patients (36 males, 21 females; mean age, 63.5 years) with OSCC who had no previous history of malignacy and were not undergoing neoadjuvant concomitant chemoradiotherapy or radiotherapy were selected for this analysis.(Table 1) The mean follow-up time was 12.4 months. The neck node metastasis findings were cN0 (n=39, 68.4%), cN+ (n=18, 31.6%), pN0 (n=44, 77.6%), and pN+ (n=13, 22.4%). All patients were treated with primary resection of tumor and neck dissection (SOHND, n=7; mRND, n=50).(Fig. 2). The number of patients with pN0 necks with T stage were T1, n=22; T2, n=12; T3, n=4; T4, n=6;. The number of patients with the pN+ necks with t stage were T1, n=2; T2, n=6; T3, n=0; T4 n=5.(Table 3)

Table 1.Demographic data

		Clinical		pathological	
Variables	Total (N=57)	cN0 (N=39)	cN+ (N=18)	pN0 (N=44)	pN+ (N=13)
Age	63.5 (22-88)	63.2	64.3	63.6	64.1
Sex					
Male	36	24	12	26	10
Female	21	15	6	18	3
Location					
Maxillary posterior area	11	6	5	8	2
Mandibular posterior area	14	8	6	12	2
Floor of the mouth	9	7	2	6	1
Tongue	11	8	3	7	3
Mandibular anterior area	4	4	0	4	2
Buccal mucosa	8	6	2	7	3
Type of neck dissection					
SOHND	7	1	6	2	5
MRND	50	38	12	42	8
HISTOLOGY					
Well differentiated	37	26	11	28	9
Moderately differentiated	20	13	7	16	4

Table 2 . Comaprison of clinical and pathological neck nodes

Clinical	Pathological		
	pNo	pN+	Total
cN0	33	6	39
cN+	11	7	18
Total	44	13	

Table 3 : Relation between neck node metastasis and T stage.

	T1	T2	T3	T4	Total
pN0	22	12	4	6	44
pN+	2	6	0	5	13
Total	24	18	4	11	57

Tables 4: Occult metastasis in patients

Patient no	sex	age	location	cT	Type of neck dissection
1	Male	47	Mandibular post area		MRND
2	Female	55	Tongue		SOHND
3	Male	62	Buccal mucosa		MRND
4	Male	70	Mandibular post area		MRND
5	Male	52	Tongue		MRND
6	female	64	Mandibular ant area		MRND

Occult metastases were found in 6 of the 39 cN0 patients 15.4%). Neck node metastases were found in 13 patients (22.4%).(Table 4) We found no distant metastases in pN0 necks, while 3 of the 13 pN+ patients had distant metastases. Histopathological differentiation did not reveal any characteristics related to pathological lymph node metastasis ($\chi 2$ test, P>0.05). However, there was a statistically significant relationship between neck node metastasis and T stage (P =0.014).(Table 3) Neck node metastasis and distant metastasis were also significantly related (Fisher's exact test, P=0.009).(Table 5)

Table 5 : Relation between neck node metastasis and distant metastasis

Distant metastasis	pathological	
	pN0	pN+
Present	44	10
absent	0	3

DISCUSSION:

Based on meta-analysis of four prospective RCTs in oral cavity cancer patients, elective neck dissection significantly decreases the disease-specific death rates of OSCC patients with N0 neck 30. The presence of occult metastasis ranged from 5% to 30% in the elective neck dissection group and from 35% to 59% in the observation group[5]. The decreased incidence of occult metastasis in the elective neck dissection group is most likely due to removal of fibro-fatty tissue in this group. In the present study, histopathological diagnosis revealed occult metastasis in 6 patients (15.4%). Results in our study was almost similar to that of Shimamoto et al.[4], who found a 17.0% rate of cervical node metastasis; however, higher rates of occult metastasis have been found in other studies. The tongue and mandibular posterior area were found to be common subsites associated with occult metastasis.

In many studies, elective neck dissection have been found to improve the loco regional control rate[4,5]. Where as Observation of the neck tends to be associated with a greater number of loco regional recurrences and poorer prognosis. Smaller tumors (early stage) are potentially aggressive, and the incidence of nodal metastasis is high. Weiss et al.[7] suggested guidelines for N0 OSCC, recommending END if the probability of occult cervical lymph node metastasis is greater than 20%. However, Okura et al.[8] concluded that END should be recommended if the probability of occult metastasis is higher than 44.4%. The probability of occult metastasis has been reduced due to improvement of radiological and treatment modalities.

In our study, 11 of 18 clinically cN+ patients were found to be pathologically pN0 after the operation. Sentinel node biopsies were not performed in this study, and the discussion regarding this is beyond the scope of this article. The advantages of SOHND compared with mRND as a therapeutic procedure remain controversial due to a lack of prospective studies.

The most common subsites of oral cavity cancer are the tongue and floor of the mouth. Tongue cancer metastasizes more often than floor-of-the-mouth cancer. In addition, these two subunits have a tendency to spread to the contralateral side. In our study, the maxillary and mandibular posterior areas were found to be more common subsites than the tongue and floor of the mouth. The mandibular anterior area and buccal mucosa were predominant subsites for occult metastasis.

Yuen et al.[11] detected nodal recurrence in 37% of patients in the observation neck group. The authors concluded that selective neck dissection alone is an adequate treatment for oral cancer patients with N0 neck, even though nodal micrometastasis might be missed histopathologically. In patients with N+ neck, selective neck dissection and radiotherapy have been advised for better nodal control. Most studies have failed to demonstrate that survival outcomes differ significantly between the END group and the observation group. Even fewer studies have demonstrated the significance of END in OSCC patients with clinically N0 neck.The major advantage of END in clinically N0 neck patients is that its surgical morbidity is lower than that of mRND for patients with nodal recurrence in the observation group. Most patients in the observation group will need mRND and will thus have greater chances of surgical morbidity. On the other hand, the disadvantage of END is that 70% of N0 neck patients will undergo unnecessary neck dissections, incurring additional costs and surgical morbidity. The advantage of observation is that only 30% to 40% of patients report nodal metastasis requiring neck treatment. The major disadvantage of observation is that patients may need radical or modified neck dissection, which have reduced survival rates.

When metastasis occurs, close follow-up is a major determinant of survival outcome and nodal recurrence irrespective of the choice of treatment for N0 neck. Kuntz and Weymuller[9] noted that shoulder disabilities at 6 months were more common with mRND than with SOHND. Rastogi et al.[12] found statistically significant differences between super-selective neck dissection (level I, IIa, III) and selective neck dissection (level I, IIa, IIb, III) groups, including less shoulder morbidity and a better quality of life in the super-selective neck dissection group. Therefore, clinical, radiological, and histopathological evaluations should play a major role in the decision to involve level IIb in neck dissection. Positive nodal metastasis in sublevel IIa strongly signifies an association of notal metastasis of sublevel IIb. Still, there is no clear indication for neck dissection in cN0 necks. However, neck dissection in cN0 necks has been shown to be better than observation. The limitation of our study is its

retrospective nature. Nevertheless, we found a statistically significant relationship between neck node metastasis and T stage (P=0.014) and between neck node metastasis and distant metastasis (P=0.019).

CONCLUSION:

In our study occult metastasis were seen in 15.4% of final neck dissection specimens in histopathological examination which were comparable with other studies. Neck nodal metastasis were related to size of tumour and also to distant metastasis in follow uo period. So additional Rcts are required with larger number of subjects to determine treatment modalities for N0 neck

REFERENCES:

1. Byers RM, El-Naggar AK, Lee YY, Rao B, Fornage B, Terry NH, et al. Can we detect or predict the presence of occult nodal metastases in patients with squamous carcinoma of the oral tongue? Head Neck 1998;20:138-44.
2. Ren ZH, Wu HJ, Tan HY, Wang K, Zhang S. Transfer of anterolateral thigh flaps in elderly oral cancer patients: complications in oral and maxillofacial reconstruction. J Oral Maxillofac Surg 2015;73:534-40
3. Woolgar JA, Triantafyllou A, Lewis JS Jr, Hunt J, Williams MD, Takes RP, et al. Prognostic biological features in neck dissection specimens. Eur Arch Otorhinolaryngol 2013;270:1581-92
4. Shimamoto H, Oikawa Y, Osako T, Hirai H, Mochizuki Y, Tanaka K, et al. Neck failure after elective neck dissection in patients with oral squamous cell carcinoma. Oral Surg Oral Med Oral Pathol Oral Radiol 2017;124:32-6.
5. Kligerman J, Lima RA, Soares JR, Prado L, Dias FL, Freitas EQ, et al. Supraomohyoid neck dissection in the treatment of T1/T2 squamous cell carcinoma of oral cavity. Am J Surg 1994;168:391-4.
6. Byers RM, Weber RS, Andrews T, McGill D, Kare R, Wolf P. Frequency and therapeutic implications of "skip metastases" in the neck from squamous carcinoma of the oral tongue. Head Neck 1997;19:14-9.
7. Weiss MH, Harrison LB, Isaacs RS. Use of decision analysis in planning a management strategy for the stage N0 neck. Arch Otolaryngol Head Neck Surg 1994;120:699-702.
8. Okura M, Aikawa T, Sawai NY, Iida S, Kogo M. Decision analysis and treatment threshold in a management for the N0 neck of the oral cavity carcinoma. Oral Oncol 2009;45:908-11.
9. Kuntz AL, Weymuller EA Jr. Impact of neck dissection on quality of life. Laryngoscope 1999;109:1334-8
10. Garavello W, Ciardo A, Spreafico R, Gaini RM. Risk factors for distant metastases in head and neck squamous cell carcinoma. Arch Otolaryngol Head Neck Surg 2006;132:762-6.
11. Yuen AP, Ho CM, Chow TL, Tang LC, Cheung WY, Ng RW, et al. Prospective randomized study of selective neck dissection versus observation for N0 neck of early tongue carcinoma. Head Neck 2009;31:765-72.
12. Rastogi S, Sharma A, Choudhury R, Tripathi S, Al Wayli H, Amrithraj A, et al. Is superselective neck dissection safer than supraomohyoid neck dissection for oral carcinoma patients with N0 neck in terms of shoulder morbidity and recurrence rate? J Oral Maxillofac Surg 2018;76:647-55