



RESEARCH ARTICLE

EVALUATION THE LEVEL OF CERVICAL METASTATIC LYMPH NODE OF
THE PATIENTS WITH ORAL SQUAMOUS CELL CARCINOMA

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ARTICLE INFO

Article History:

Received 22nd February, 2018
Received in revised form
03rd March, 2018
Accepted 09th April, 2018
Published online 23rd May, 2018

Key words:

Oral squamous cell carcinoma,
Cervical lymph Node Level,
Metastasis.

ABSTRACT

Background: Oral squamous cell carcinoma (OSCC) is the most common type of oral cancer that affects the head and neck region with highest mortality rate among all malignancies and it is the sixth common malignancy reported worldwide.

Aims: To evaluate the level of cervical lymph node metastasis in patients with oral squamous cell carcinoma.

Methods: This prospective study was done in Oral and Maxillofacial Surgery Department, Bangabandhu Sheikh Mujib Medical University (BSMMU) during the period of July 2015 to June 2017. Fifty six patients with oral squamous cell carcinoma were included in this study. After the clinical evaluation, all patients were undergone to either unilateral or bilateral neck dissection. The excised lymph nodes along with fibrofatic tissue were examined histopathologically according to level base to find out the lymph node status.

Result: Lymph node metastasis was significantly increased with the increases of tumour size in OSCC. Histopathologically this study showed, 57.1% cases had lymph node metastasis, where 53.1% patients had lymph node metastasis at level-I, 25.0% patient had metastasis at level-II, 15.6% patients had lymph node metastasis at both level-I and II and 6.3% patients had metastasis at both level-II and III. In this study no lymph node metastasis was found at level-IV and level-V.

Conclusion: Selective supraomohyoid neck dissection (level I-III) should be done as an elective treatment in T1-T4. Lymph node Level IV should be included only when there is preoperative suspicion of level II or III nodal involvement.

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Citation: Dr. Quazi Billur Rahman, Md. Ahsan Habib and Dr. Shailesh Gautam. 2018. "Evaluation the level of cervical Metastatic lymph node of the patients with oral squamous cell carcinoma", *International Journal of Current Research*, 10, (05), 68975-68978.

INTRODUCTION

Oral cancer causes death of approximately 350,000 all over the world every year out of 630,000 affected and more than 90% of all oral cancers is oral squamous cell carcinoma (OSCC) (Vigneswaran, 2014). The incidence rate of this cancer is not distributed uniformly as three-quarters of affected people reside in the developing countries and it is much more common in Southeast Asia (World Health Organization, 1984), while in developed countries it is less common. The incidence of oral malignancy is 30%–50% in India (Henk, 1986), 30% in

Sri Lanka and it occurs one-third of all malignancies in Pakistan (Cawson, 1998) while in Bangladesh it is 2nd and 3rd highest among male and female respectively (Hussain, 2013) where as in the UK and USA, it occurs only for 2% of all malignancies (Cawson, 1998). Differences in incidence rates across the world are mainly due to the types of oral cancer-associated lifestyles, practiced by different groups of people. The main risk factors of oral cancer are still the smokeless tobacco chewers, smoking tobacco, alcohol drinking and betel quid chewing etc (Petti, 2009). Oral cavity has very high chances of cervical metastases due to numerous blood supply and lymphatic drainage. The major determinant of the prognosis of oral carcinoma is the risk of cervical metastasis. The most important as well as the most frequent pathway for the spread of oral malignancies is lymphatic channel through regional lymph node.

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Nodal metastasis at the time of diagnosis is an important and an adverse prognostic factor as it decrease 50% survival rate of 5 year (De Cicco *et al.*, 2006). It is widely accepted that advanced oral cancer can be treated with elective neck dissection, but it still remains controversial in the management of stage I cancer. In absence of clinical neck disease, stage-I oral cancer is often treated with primary tumor resection and clinical follow-up of the neck. However, many studies have shown the incidence of occult neck metastases in stage I/II disease to be as high as 42% (Ho, 1992).

MATERIALS AND METHODS

This prospective study was done in Oral and Maxillofacial Surgery Department, Bangabandhu Sheikh Mujib Medical University (BSMMU) during the period of July 2015 to June 2017. Fifty six patients with oral squamous cell carcinoma were included, where 24(42.9%) patients were male and rest of 32(57.1%) were female patients. Male: Female ratio was 1:1.3. The mean age of the patients was 55.2±11.7 years, where twenty four (42.9%) patients belong to age below 50 years, 28(50.0%) patients were in 51-70 years and 4(7.1%) patients were above 70 years. Relevant history was taken, clinical examination and histological finding of lesion and lymph node was recorded. Then all patients were undergone either unilateral or bilateral neck dissection. The excised lymph node along with fibrofatic tissue were examined histopathologically according to level base to find out the lymph node status. After that all data were correlate to find out the sociodemographic and clinicopathological relationship.

Statistical Analysis: Computer based statistical analysis was carried out with appropriate technique and systems. Data were processed and analyzed by SPSS 22 (Statistical program for Social Sciences). The summarized data was presented in the form of tables and graphs, and Chi-square or Fisher's exact test was done to correlate the sociodemographic and clinicopathological parameters.

RESULTS

In this study considering the site of lesion it was found that 20 (35.7%) patients had malignancy in Buccal mucosa, 9 (16.1%) in vestibule, 10 (17.9%) in Retromolar area, 8(14.3%) in Tongue and 9 (16.1%) patients had malignancy in maxilla (Table 1).

Table 1. Distribution of the study patients according to site of lesion

(n=56)		
Site of lesion	Number of patients	Percent (%)
Buccal mucosa	20	35.7
Vestibule	9	16.1
Rtromolar Area	10	17.9
Tongue	8	14.3
Maxilla	9	16.1
Total	56	100.0

Table 2. Distribution of the patients by tumour size (n=56)

Tumor size	Number of patients	Percent (%)
T1 (Less than 2cm in diameter)	3	5.4
T2 (2cm to 4cm in diameter)	12	21.4
T3(More than 4cm in diameter)	14	25.0
T4 (Invade to adjacent tissue)	27	48.2
Total	56	100.0

Table 3. Association of lymphnode metastasis with tumour size

Tumour size	n	Post-operative histopathological report		Chi square test
		Metastasis No. (%)	Non-metastasis No. (%)	
T1	3	0(0.0%)	3(100.0%)	$\chi^2 = 9.94$ df = 3 p = 0.019*
T2	12	4(33.3%)	8(66.7%)	
T3	14	8(57.1%)	6(42.9%)	
T4	27	20(74.1%)	7(25.9%)	
Total	56	32(57.1%)	24(42.9%)	

Table 4. Post-operative histopathological lymph node metastasis level

(n=56)			
Histopathological lymph node metastasis level	Number of patient	Percent (%)	
No lymph node metastasis	24	42.9%	
Lymph node metastasis	32	57.1%	
Level of metastasis			
level I	17	32	53.1%
level II	8		25.0%
level I & II	5		15.6%
Level II & III	2		6.3%
Total	56		100%

Regarding the tumor size, 3 (5.4%) patients were T1 in tumor size, 12 (21.4%) patients were T2 in tumor size, 14 (25.0%) patients were T3 in tumor size and 27 (48.2%) patients were T4 in tumor size (Table 2). There were 32 cases out of 56 cases had lymph node metastases. Histopathology no metastasis was found in T1 category, 4(33.3%) patients had metastasis of T2 category, 8(57.1%) patients had metastasis of T3 and 20(74.1%) lymph node metastasis was found in T4 category patients (Table 3). In present study, histopathology we found 32(57.1%) cases had lymph node metastasis, where 17(53.1%) patients had lymph node metastasis at level-I, 8(25.0%) patient had metastasis at level-II, 5(15.6%) patients had lymph node metastasis at both level-I and II and 2(6.3%) patients had metastasis at both level-II and III. In this study we found no lymph node metastasis at level-IV and level-V (Table 4).

DISCUSSION

The treatment options of OSCC patients consist of wide local excision and regional lymphadenectomy along with fibrofatic tissue including the lymphatic drainage basin followed by chemoradiation. In management of patients with OSCC, therapeutic outcome is mainly influenced by the presence of nodal metastases. So the treatment protocol of OSCC depends on the presence or absence of lymph node metastasis and distant metastasis. Therefore, the stage and grade of oral cancer are the most important factors of treatment modalities. In this study, Age range of the patient was 28 to 80 years. The mean age of the patients was 55.2±11.7 years, where 24(42.9%) was male and 32(57.1%) was female patients. Meanwhile, the male: female ratio was 1:1.3. Previously a study was performed where 32(76%) cases were male and 10(24%) cases were female and the mean age of all the patients was 52 ±7.5 years with a range of 31-75 years (Ikram *et al.*, 2013). These findings are nearly similar with our study. Although another study reported, out of 826 cases 55% were male and 45% were female. The mean age was 59 ± 13.7 years with a range of 18 – 85 years in all cases (Khalili, 2008). In present study, regarding the site of the lesion, 20(35.7%) patients had malignancy in buccal mucosa, 9(16.1%) patients in vestibule, 10(17.9%) patients in retromolar area, 8(14.3%) patients on tongue and 9(16.1%) patients had cancer in maxilla.

A study done by Shenoi *et al.* observed that the mandibular alveolus was the most frequently involved site, accounting for 135 cases (45.76%), followed by buccal mucosa 70 cases (23.73%). Tongue was involved in 54 cases (18.31%) and maxillary alveolus in 17 (5.76%) patients. Nine patients had involvement of lip (3.05%), in six patients (2.03%) floor of mouth, and four patients had palate (1.36%)¹². Another study reported, oral SCC affects the tongue in 20% - 40% cases and the floor of the mouth in 15% - 20% cases (Feller, 2012). In present study considering the tumour size, 27(48.2%) patients were T4 in tumour size, 14(25.0%) patients were T3 in tumour size, 12(21.4%) patients were T2 in tumour size and 3(5.4%) patients were T1 in tumour size. Among these 56 OSCC patients, no lymph node metastasis was found in T1 category patients but 33.3% metastasis was observed in T2 category, 57.1% metastasis in T3 category and 74.1% metastasis in T4 category patients. Lymph node metastasis was significantly increased with the increases of tumour size. Akhter *et al.* reported 2 cases were of T1 category, of which there was no lymph node metastasis, 29 cases were of T2 category, but 37.9% were metastatic, 7 cases belonged to T3 category and 3(42.8%) were metastatic, 2 cases were in T4 and 1(50.0%) cases had metastasis. These findings are similar to our study. Another study done by Ehsanul Haq *et al.* observed, most of the cases were T3 and T4 size (30% and 38% respectively). The overall rate of cervical lymph node metastases was 60% (30/50), which included 59% metastases in cases of oral tongue and 62% cases of floor of the mouth. No metastases were observed in T1 sized lesion of floor of the mouth and the highest cervical lymph node metastasis was found in T4 lesions (79%) (Haq *et al.*, 2011). In current study overall 57.1% metastasis was found, where 17(53.1%) patients had lymph node metastasis at level-I, 8(25.0%) patient had metastasis at level-II, 5(15.6%) patients had lymph node metastasis at both level-I and II and 2(6.3%) patients had metastasis at both level-II and III. In this study we found no lymph node metastasis at level-IV and level-V. This data is supported by another series, in which an incidence rate of metastasis was only 4.6% of level IV reported after elective ND in oral SCC patients, with the exception of the oral tongue, in which the incidence rate was 5.6%. There was no significant difference on the neck recurrence rates of patients after ND for levels I-III and I-IV when postoperative radiotherapy was contributed and the authors suggested that the removal of level IV nodes would not benefit patients (Bajwa *et al.*, 2011). Previously another study was performed, where the incidence rate of metastasis on levels IV/V was 2.91%, considering patients with one involved node (Köhler Hugo Fontan, 2012). Metastasis to level IV and level V were infrequent. Their findings are similar to our study. A study comparing neck recurrence rates in patients submitted to selective and radical ND revealed similar results for both approaches, and the authors concluded that the removal of nodes on levels I to III was sufficient (Kowalski, 2002). This result supports that the selective supraomohyoid neck dissection (level I-III) should be enough if there is no other indication for radical neck dissection.

Conclusion

Selective supraomohyoid neck dissection (level I-III) should be done as an elective treatment in T1-T4. Lymph node of level IV should be included only when there is preoperative suspicion of level II or III nodal involvement. For clinically and histopathologically confirmed level III or IV positive

necks, functional neck dissection (level I-V) is suggested to be done as therapeutic treatment if there is no evidence of extra capsular spread.

Financial support and sponsorship: Nil.

Conflicts of interest: There are no conflicts of interest.

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