ORIGINAL ARTICLE

Frequency of Occult Neck Metastasis in Squamous Cell Carcinoma of Oral Cavity

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ABSTRACT

Background: Carcinomas of oral cavity are not very uncommon. The aim of curative surgery is to excise the carcinoma with an adequate margin of normal tissue. Metastasis to cervical lymph nodes occurs more frequently from carcinoma of the oral cavity. The presence of neck metastasis decreases survival rate upto 50%. Currently, no guideline exists for neck dissection with primary surgery. This study was done to determine that how common occult neck metastasis is present when primary surgery is done.

Aim: To determine the frequency of occult neck metastasis confirmed by histopathology after neck dissection in clinically node negative No neck in squamous cell carcinoma of oral cavity.

Study design: Descriptive case series

Setting: Department of ENT, Jinnah Hospital, Lahore

Sampling technique: It was probability purposive sampling

Duration: Six months: from 16-09-2013 to 15-03-2014.

Methods: Eighty patients with diagnosis of carcinoma of oral cavity were included in the study. All the patients had resection of tumor and neck dissection. The cervical lymph node excision was also done. Histopathology was sent to determine the presence of occult metastasis which was described frequency distribution.

Results: Mean age of the patients was 50.46+6.89 years. There were 52 (65%) male and 28 (35%) female. The occult metastasis was present in 33 (41.2%) patients while it was not present in 47 (58.8%) patients.

Conclusion: The frequency of occult metastasis was high. So, neck dissection should also be done along with primary resection of tumor for detection of neck metastasis.

Keywords: Squamous cell carcinoma; oral cavity; occult metastasis.

INTRODUCTION

The Oral Cavity has an abundant blood supply and lymphatic drainage, hence the chances of cervical lymph node metastasis are very high. Carcinoma Oral Cavity is most often treated by surgical resection. It is associated with clinically evident neck disease in 1/3rd of cases and has a high rate of occult metastasis in No neck. Occult metastasis or micrometastasis to neck is defined as histological involvement of lymph node with no clinical or radiological evidence of metastasis[1].

Lymphatic system is one of the important defense systems of body. Interstitial fluid is drained through the lymphatics. Lymph nodes which act as filters are scattered through out the body[2].

Carcinoma of oral cavity is a common head and neck cancer. In two studies from Pakistan tongue was the second commonest site involved in oral cavity[1.2]. The aim of curative surgery is to excise the carcinoma with an adequate margin of normal tissue. Metastases to cervical lymph nodes occur more frequently from carcinoma of the tongue than from any other site in the oral cavity. Nodal status at presentation is the most important prognostic factor, if the nodes are affected then the chance of cure falls by half. Treatment failure in the neck is hence a significant problem[4,5].

Occult metastasis (micrometastases) is defined as histological detection of lymph node involvement in the absence of clinical or radiological evidence. There is a high incidence of occult metastases even from early carcinoma (T1 and T2) of tongue .It can be seen in over 30% of patients with early carcinoma.[6,7,8].

The treatment of neck in early stage, node negative oral tongue carcinoma is controversial; both "elective neck dissection" and "watchful waiting" have their proponents[9].

When performing elective neck dissection, "Supraomohyoid neck dissection" has been advocated as the procedure of choice. This dissection involves removal of lymph nodes from level I (submental and submandibular triangles), II

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(upper jugular) and III (midjugular). Investigators from M.D. Anderson Cancer Center have advocated an "extended" supraomohyoid neck dissection that also encompasses level IV (lower jugular) because of the possibility of "skip metastases" to that area. On the other hand in another study there was no significant difference in treatment results between radical neck dissections and selective I, II, III neck dissection[10,11].

When patients have clinically evident neck disease, comprehensive neck dissection is usually performed with the primary surgery, either a radical or a modified radical neck dissection. Establishing an approach to No (clinically node negative) neck has been somewhat more difficult and controversial[12].

In tumors of oral cavity (such as tongue, lateral border, as it is affected most followed by floor of mouth, lower alveolus and buccal mucosa), if elective neck dissection is done, a high incidence of occult metastasis is usually seen[13].

The oral cavity carcinoma most often spreads to level I,II, III i.e., sublingual, submandibular nodes and upper and middle deep jugular chain from level of posterior belly of digastric to the omohyoid. Therefore Supraomohyoid neck dissection encompassing levels I - III yields the most prognostic information in clinically node negative neck[14].

The prevalence of occult neck disease in the clinically No neck is 50%, whereas an incidence of 32.4% has been reported in Pakistan. [15] Frequency of occult metastasis was 36.7%[16].

Regardless of the site and size of tumor T1-T4,the presence of a single lymph node in ipsilateral or contralateral side of neck reduces the 5 year survival by 50%.Patients undergoing elective treatment of No neck appear to have survival advantage over patients who are simply observed. Neck Dissection has the advantage of more accurate pathological staging of neck compared with all available radiological investigations and pathological evidence can guide the subsequent use of post operative radiation[17].

MATERIAL AND METHODS

Study was carried out in ENT Department Allama Iqbal Medical College/ Jinnah Hospital. Lahore. Sample size of 80 cases was calculated using 95% confidence level, 11% margin of error taking expected percentage of occult neck metastasis i.e., 36.7% confirmed by histopathology in squamous cell carcinoma of oral cavity. Six months duration from 16-09-2013 to 15-03-2014.

Inclusion criteria

1. Age: 20-60 years
2. Gender: both sexes
3. Biopsy proven (histopathology)squamous cell carcinoma cases of oral cavity tumors with no neck nodes.

Exclusion criteria

1. Previously operated patients.
2. Patients with systemic metastasis (will be detected by means of chest x ray,ultrasound abdomen and CT scan)
3. Patients unfit for general anaesthesia.
4. Previously irradiated patients.

Data collection procedure: Biopsy proven patients with squamous cell carcinoma of oral cavity with tumor size T1-T4 with no neck nodes presenting at Out Patients Department of Allama Iqbal Medical College/ Jinnah Hospital, Lahore were admitted and prepared for surgery. The demographic variables i.e., name, age, sex, address were recorded and informed consent was taken. Resection of the tumor with safe margin of 1-1.5 cm was done and neck dissection was done. The extent of neck dissection was supraomohyoid. The nodes were clipped on a wooden board and marking was done. The marked specimen along with biopsy form containing details of history and description of marked specimen were sent for histopathology in which absence or presence of metastaic tumor cells were noted.

Data analysis procedure: The collected information was transferred to SPSS. The result was presented in the form of frequencies and percentages. Qualitative variables such as occult neck metastasis and sex were presented as percentages and frequencies. Quantitative variables such as age were presented as mean n standard deviation.

RESULTS

Eighty patients with diagnosis of oral cavity cancer were included in the study. The mean age of the patients was 50.46±6.89 years [range 26–60 years]. There were 8(8%) patients of age range of 31–40 years, 22(27.5%) patients of age range of 41–50 years, and 50(62.5%) patients of age range of 51- 60 years (Table 1). There were 52(65%) male patients and 28(35%) patients were female. The female to male ratio was 1:1.85 (Fig. 1). The occult metastasis was present in 33(41.2%) patients while it was not present in 47(58.8%) patients (Fig. 2).

Table 1: Distribution of patients by age (n = 80)

Age	n	%age
20–30	0	0
31– 40	8	10
41–50	22	27.5
51–60	50	62.5
Mean±SD	50.46±6.89	
Range	34–60	

Fig. 1**:** Distribution of patients by sex (n=80)

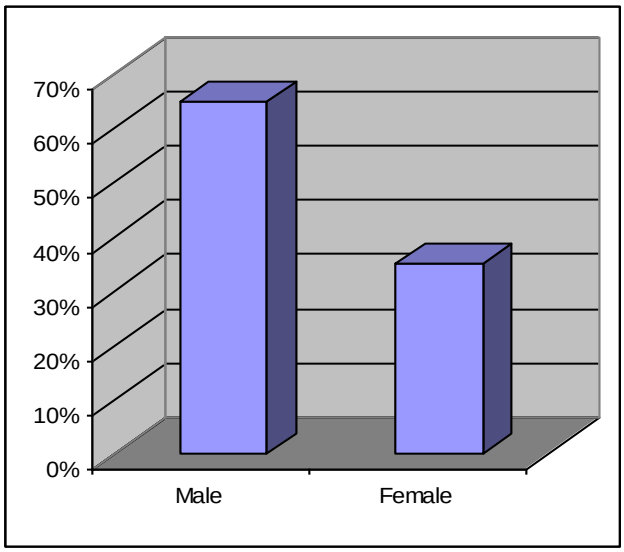
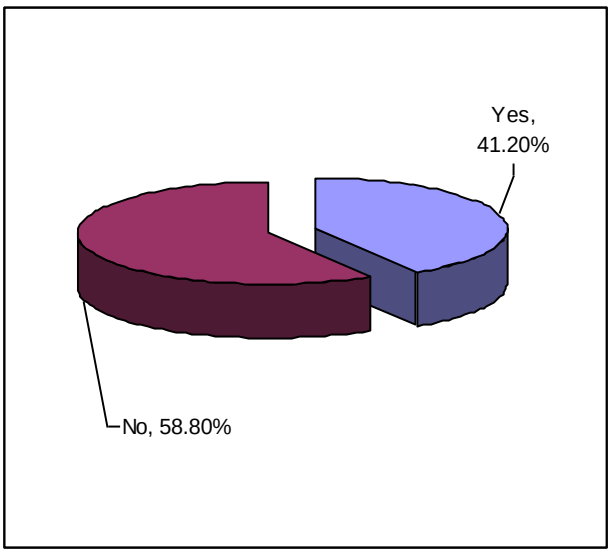


Fig. 2: Distribution of patients by presence of occult metastasis (n=80)



DISCUSSION

Occult metastasis or micro metastasis to neck is defined as histological involvement of lymph node with no clinical or radiological evidence of metastasis. In early lesions of tongue (T1 and T2) radiotherapy or surgery is offered to the primary site. But interestingly, if elective neck dissection is also done a high incidence of occult metastasis is usually seen. In our study, we did the neck dissection along with the surgery for primary tumor. This was a prospective study conducted in a tertiary care centre. The results of this study showed a high frequency (41.2%) of occult metastasis in the neck.

The mean age of the patients was 50.46±6.89 years ranging from 34–60 years. There were no patients below 30 years of age. However, in study by Qi-Gen F et al[18] the mean age of the patients was a little higher 56.6 (range: 22- 94) years. This higher mean age may be due to higher age range included in their study. In another study conducted in Pakistan by Akhtar S[19] the age of the patients ranged from 25 to 78 years (average 55 years). So, this can be observed that usually patients in fifth decade of life are affected more.

In our study, 65% patients were male. In study by Qi-Gen F et al[18] the male patients dominated over female. The frequency of male patients in their study was 63.24%. In another study by Akhtar S et al[19] male dominance was also observed. There were 61.7% male patients in their study.

In our study, we observed a high frequency of patients with occult metastasis i.e., 41.2%. In literature, various other clinical trials have also shown the frequency of occult metastasis among patients with oral squamous cell carcinoma. The results of these trials are variable among different authors.

Beenken S et al[20] also found 40 % incidence of micrometastasis. The incidence of occult node positive neck was 27% in another study by Yuen et al[21]**.** In study by Akhtar S, et al[19] the frequency of occult metastasis with SCC of oral cavity was 32%. However, in study by Qi-Gen F et al[18] a lower frequency of occult metastasis have been reported i.e. 13.6%.

D'Cruz et al, [22] reported 37.5% of T1 lesions and 62.5 of T2 lesion were proved to be pathologically positive nodal metastasis. Vijayakumar et al, [23] reported the incidence of occult metastasis in early tongue cancers was 62.2%. This could be explained by the depth of most of tumors was less than 4mm. We could find occult regional metastases had a huge impact on recurrence survive. Therefore, Elective Neck Dissection (END) was advocated in general for most of early tongue cancers, but not for very superficial tumors. Also, END could help enable the accurate neck stage, it may benefit to better selection of patients who need postoperative adjusted therapy. Moreover, we detected another poor prognostic indicator was multiple levels of nodal involvement in most patients. Similar with what Vijayakumar et al, reported, most of the involved lymph nodes were found to locate to level I, II, III, level IV was involved in less than 10% patients. However, it might be inadequate if supra-omohyoid neck dissection was done. In our follow up, 17 patients had regional recurrences, most of them occurred in pathologically positive neck.

Sentinel Lymph Node Biopsy (SLNB) may help to make a decision whether an ND was needed.

Ross et al[24] performed 57 SLNBs in 48 patients with cN0 neck status and described 35% of the patients were upstaged, the rest were staged as sentinel lymph node negative. In these negative patients, only 1 patient occurred neck recurrence after a mean follow-up time of 18 months, this study showed the high sensitivity of SLNB. Similarity, Civantos et al[25] performed SLNB on 140 cT1-2 patients, and the authors reported this technique predicted a histologically negative neck in more than 90% patients correctly.

This study had some limitations. This was a single center study with limited population size. All the surgeries were done by expert surgeons who had at least 5 years post fellowship experience of surgery.

CONCLUSION

This study concluded that frequency of occult metastases rate was very high and thus warrants elective neck dissection in early cases with negative examination of neck.

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