

A COMPARATIVE STUDY OF CLINICAL, RADIOLOGICAL AND HISTOPATHOLOGICAL FINDINGS IN DIAGNOSING THE NECK NODE METASTASIS OF BUCCAL MUCOSAL CARCINOMA

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ABSTRACT

BACKGROUND

Gingivo-buccal mucosa complex cancer is commonly seen in India. Neck node involvement is the single most important predictor of outcome for oral cancer as the survival rate drops significantly with presence of metastatic neck node.

OBJECTIVES

To compare efficacy of clinical, radiological findings with histopathological findings in diagnosing the cervical node metastasis of buccal mucosa carcinoma.

MATERIALS AND METHODS

100 patients with biopsy proven squamous cell carcinoma of gingiva-buccal complex were included. Clinical, radiological and histopathological investigations were done to determine the cervical node metastasis and to compare the efficacy.

RESULTS

Mean age of the study subjects was 49.87 years. Nodal metastases from primary buccal mucosa carcinoma occur in orderly manner involving level I, II, III. There was a statistically significant difference between the clinical nodal staging with that of the radiological nodal staging, and radiological nodal staging with that of pathological nodal staging. Clinical and radiological nodal staging had low sensitivity and high specificity in comparison with pathological nodal staging.

CONCLUSION

In the present study, the level I and II were the commonest nodal station involved. Level IV involvement was rare. Clinical and radiological nodal staging had low sensitivity and high specificity in comparison with pathological nodal staging.

KEYWORDS

Oral cancer, gingiva-buccal mucosa complex, nodal staging.

HOW TO CITE THIS ARTICLE: Iyyanna H, Nandini V. A comparative study of clinical, radiological and histopathological findings in diagnosing the neck node metastasis of buccal mucosal carcinoma. J. Evid. Based Med. Healthc. 2016; 3(17), 669-671. DOI: 10.18410/jebmh/2016/151

INTRODUCTION: In India, oral cavity is the most common cancer site reported by Cancer Registries.¹ Oral cancer is the most common cancer among males (13% of all malignancies) and third most common cancer in females. Gingivo-buccal mucosa complex cancer is commonly seen in India, while carcinoma of tongue and floor of mouth is more frequent in western population.

Neck node involvement is the single most important predictor of outcome for oral cancer. Survival rate drops significantly with presence of metastatic neck node.² A false positive neck node in clinical examination is attributed to

reactive lymph nodes. Skip metastasis and contralateral nodal involvement from buccal mucosa is rare. At present, N0 neck are treated by selective neck dissection and N+ are treated by comprehensive neck dissection.³

Although, the pattern of neck node metastasis from oral cavity tumours is well established, there is paucity of data of site specific pattern of neck nodal metastasis of gingivo-buccal tumours amongst Indian patients. This is of significant relevance given the large number of patients with gingivo-buccal tumours. Since the management of neck nodes is of pivotal importance in management of oral cancer, a definite understanding of pattern of neck node metastasis is essential. Therefore, this study aims at determining the cervical lymph node metastasis from buccal mucosa cancer in Indian population and to compare efficacy of clinical, radiological findings with histopathological findings.

Submission 21-01-2016, Peer Review 06-02-2016,

Acceptance 15-02-2016, Published 29-02-2016.

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DOI: 10.18410/jebmh/2016/151

OBJECTIVE: To compare efficacy of clinical, radiological findings with histopathological findings in diagnosing the cervical node metastasis of buccal mucosa carcinoma

MATERIALS AND METHODS: A prospective study was conducted over a period of one year in Narayana Hrudayalaya, a multi-speciality hospital in Bangalore. All the cases of biopsy proven squamous cell carcinoma of gingiva-buccal complex during the study period were included in the present study. Previously treated cases and those undergoing palliative treatment were excluded from the study. Hence a total of 100 study subjects were included after obtaining their informed consent. Institutional ethics committee approval was obtained before conducting the study.

Information was elicited regarding their habits, followed by clinical and radiological examination of primary tumour and nodal involvement was done and the tumour staging was done based on the findings obtained. Patients underwent appropriate surgical treatment and the neck nodes dissected from various neck levels were marked and sent separately for histopathological evaluation and pathological TNM (TUMOR, NODE AND METASTASIS) staging. Data was entered in excel sheet and was analysed using SPSS software. Results were expressed in terms of percentage and proportions with relevant statistical tests.

RESULTS: The mean age of the study subjects was 49.87 years (28-80 yrs.). Sixty percent were males and 40% were females.

Nodal level	Number of cases	Percentage
I	32	32%
II	13	13%
III	3	3%
IV	3	3%
I, II, III	1	1%
I, II, IV	1	1%
II, III, IV	1	1%
I, II	3	3%
Only I	27	27%
Only II	7	7%
Only III	1	1%

Table 1: Distribution of the study subjects based on the nodal involvement

Around 50% of the study subjects had level I and II nodal involvement based on the histopathological findings.

		Radiological nodal stage						P value
		N0	N1	N2a	N2b	N2c	N3	
Clinical Nodal stage	N0	9	7	0	8	2	0	< 0.001
	N1	3	5	1	24	1	0	
	N2a	0	0	1	5	0	0	
	N2b	2	3	0	25	0	0	
	N2C	0	0	0	1	2	0	
	N3	0	0	0	1	0	0	

Table 2: Comparison of clinical nodal stage with radiological nodal stage (N=100)

The table depicts the comparison between the clinical nodal staging with that of radiological nodal staging, the difference of which was found to be statistically significant (p<0.001).

		Pathological nodal stage						P value
		N0	N1	N2a	N2b	N2c	N3	
Clinical Nodal stage	N0	21	5	0	0	0	0	0.052
	N1	17	6	3	8	0	0	
	N2a	3	0	2	1	0	0	
	N2b	10	7	3	9	0	1	
	N2C	3	0	0	0	0	0	
	N3	0	1	0	0	0	0	

Table 3: Comparison of clinical nodal staging with pathological nodal stage (N=100)

The table depicts the comparison between the clinical nodal staging with that of pathological nodal staging, the difference of which was not found to be statistically significant (p>0.001).

		Pathological nodal stage						P value
		N0	N1	N2a	N2b	N2c	N3	
Radiological Nodal stage	N0	10	3	0	1	0	0	0.426
	N1	11	2	0	2	0	0	
	N2a	1	0	1	0	0	0	
	N2b	29	12	7	15	0	1	
	N2C	3	2	0	0	0	0	
	N3	0	0	0	0	0	0	

Table 4: Comparison of radiological nodal stage with pathological nodal stage (N=100)

The table depicts the comparison between the radiological nodal staging with that of pathological nodal staging, the difference of which was found to be statistically significant (p<0.001).

		Pathological staging	
		No metastasis	Metastasis
Clinical staging	No metastasis	21	5
	Metastasis	33	41
		54	46

Table 5: Sensitivity and specificity analysis of Clinical staging with pathological staging

Clinical staging had poor sensitivity (38.89%) and high specificity (89.13%) in comparison with pathological nodal staging

		Pathological nodal staging	
		No metastasis (NO)	Metastasis
Radiological nodal staging	No metastasis (NO)	10	4
	Metastasis	44	42
	Total	54	46

Table 6: Sensitivity and specificity analysis of radiological staging with pathological staging

Radiological staging had poor sensitivity (18.52%) and high specificity (91.30%) in comparison with pathological nodal staging.

DISCUSSION: Oral cavity cancer is the most common cancer in India and in our population the buccal mucosa is the most commonly affected sub-site.

Most of the Indian patients with buccal carcinoma present in advanced stage and show high propensity for nodal metastasis, but they are eligible for curative surgery. However, from previous studies it is known that nodal metastasis is a major independent risk-factor and it reduces the survival by 50%.

In the present study, most of the patients presented were with advanced disease and 42% had pathological T4 stage. The Sex-ratio (male: female) ratio was 3:2, the Age-group was between 28 -80 years, and the Mean-age of presentation was 49.87 years. Age-group and Sex-ratio in our study were similar to the study done by Narendra H et al.⁴

Based on metastasis, nodal involvement was found in 46%. A nodal-metastasis of 46% was observed by Sridhar Ganapathi et al.⁵ Manoj Pandey et al found 36% of nodal positivity in buccal carcinoma,⁶ and few other studies have also reported nodal-metastasis ranging from 20 to 40%. Kumar Alok et al. also reported 47% nodal-metastasis in T2, T3, and T4 lesion.⁷

Level-1 was involved in most of the cases, while significant numbers of patients were also at level-II, and

only few cases had metastasis at level-III and level-IV (three each). Metastasis at level IV without involvement of level III was seen in single case, but the isolation involvement of level IV was not seen. Similar results were found in various other studies.^{6, 7, 8, 9}

In our study, Clinical and radiological nodal staging had low sensitivity and high specificity in comparison with pathological nodal staging. Manoj Pandey et al also found low sensitivity and specificity of clinical and radiological examination in detecting lymph node metastasis.⁶ Pradhan SA et al reported false positive rate of 45% and false negative rate of 3% in detecting lymph node metastasis.¹⁰

CONCLUSION: The level I and II are the commonest nodal station involved in squamous cell carcinoma of gingiva-buccal mucosa complex. Level IV involvement is rare. Clinical and radiological nodal staging had low sensitivity and high specificity in comparison with pathological nodal staging

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