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KEY WORDS: Carcinoma, Oral cavity, CT scan, HPE, Observational study

A COMPARATIVE STUDY OF EFFICACY OF PRE-OPERATIVE CT SCAN WITH FINAL HISTOPATHOLOGY REPORT IN ORAL MALIGNANCY

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ABSTRACT

India has the largest number of oral cancer cases and one-third of the total burden of oral cancer globally. Oral cancer poses a serious health challenge to the nations undergoing economic transition. As compared to the west, the concern of oral cancer is significantly higher in India as about 70% of the cases are reported in the advanced stages (American Joint Committee on Cancer, Stage III-IV). Because of detection in the late phase, the chances of cure are very low, almost negative; leaving five-year survival rates around 20% only. It forms a significant burden on patients with cancer in India due to tobacco chewing in various forms. Prognosis of this cancer is determined by preoperative staging and histopathological grading. This study was done to find if there is any correlation between preoperative CT scan and post-operative histopathological staging of oral cancer.

INTRODUCTION

Oral squamous cell carcinoma ranks 6th in cancer related mortality globally. According to 29 population-based cancer-registries, incidence of oral cavity cancers forms significant percentage of cancers in India. Tobacco chewing, alcoholism and viral infections like HPV, EBV are recognized major etiological factors (1). Patient prognosis is determined by tumor type and extent established during staging. Head & neck cancer staging takes into consideration anatomic site, tumour size and its local infiltration, cervical lymph node involvement, and presence of distal metastasis. Up to 40% patients have early stage I&II cancers, when they initially present (2). Pre-operative CT-scan is required for staging. Histopathology gives clear idea about need for neo-adjuvant treatment.

MATERIALS AND METHODS:

All patients coming to our institute, diagnosed to have oral cancer, were included in this study.

A detailed case history and examination was recorded. In a predesigned proforma, they underwent routine investigations- Contrast CT scan of head and neck.

Subsequently, they were posted for surgery. Depending on the stage of the disease, extent of surgery was decided and the specimen sent for histopathological examination. CT report was compared with final histopathology report on the basis of TNM staging and neurovascular infiltration.

Study Design:

Observational study-evaluation of efficacy of imaging modality (CT scan).

RESULTS

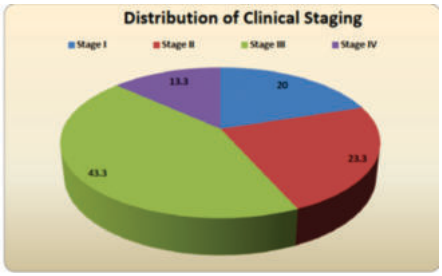

Figure 1

Figure 1 shows that the majority(43.3%) of the cases were stage III of the disease at the time of presentation.

Observations showed CT-scan findings over-staged the disease when compared with the histopathological report. CT-scan detected 46.7% cases to have T1disease; whereas histopathology report was suggestive of T2disease. CT-scan detected 71.4% cases to have N2 nodal involvement, whereas histopathology report was suggestive of N0 nodal involvement.

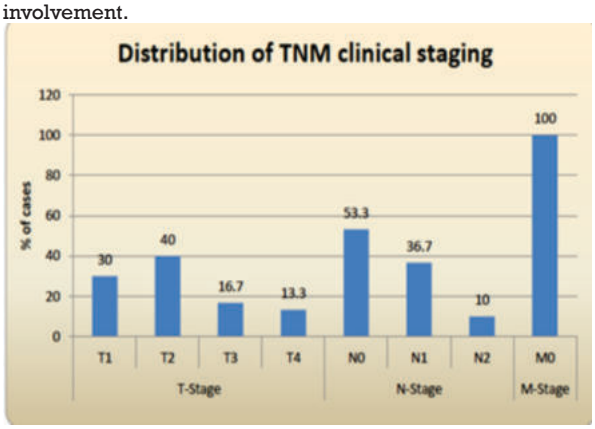

Figure 2:

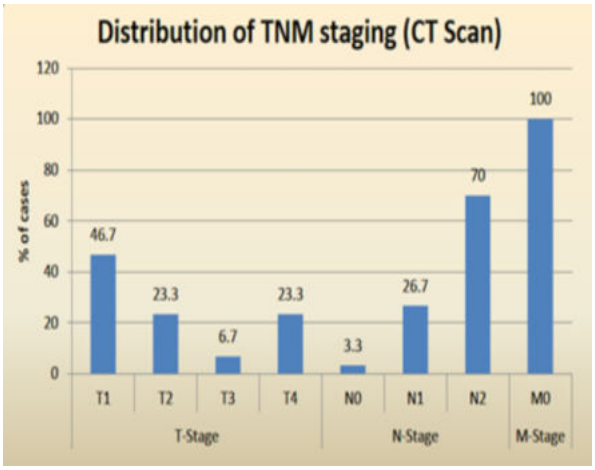

Figure 3:

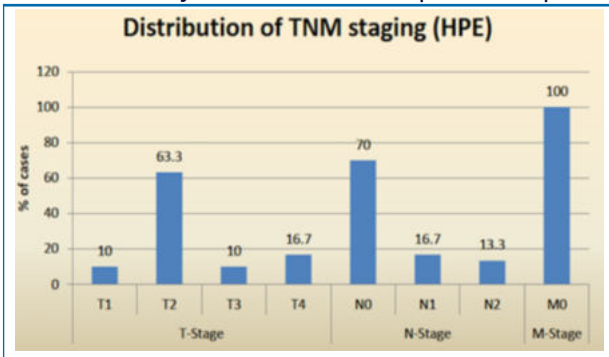

Figure 4:

This study concluded that apart from providing nodal status and tumor size in cases with carcinoma oral-cavity, CT-scan findings over-staged the disease when compared with the histopathological report.

Tumour staging based on CT scan finding when compared with final HPE staging, the findings were different. CT scan has staged T1 in total 14 patients, out of which 11 were staged T2 in the final HPE report. So, the 'T' stage in CT scan was under-staged.

CT scan has staged N1 in total 8 patients, out of which 5 were staged N0 in the final HPE report. Hence, the nodal stage in CT scan was over staged.

DISCUSSION

In the present study, 30 patients with diagnosed carcinoma oral cavity were included and the CT scan staging was compared with final histopathological staging. The tumour staging and the nodal status were compared. The patients with metastasis and recurrences were not included in the study.

Both tobacco and alcohol consumption are well established risk factors. Betel quid chewing, either with addition of tobacco or without, increases the risk of oral cancer, independent of use of other tobacco and alcohol products according to a recent Indian study. (3). Carcinogenic nitrosamines derived from the areca nut, the primary ingredient in betel quid, are formed in the saliva of chewers. Areca nut is known to induce oral preneoplastic lesions with a high propensity to progress to cancer. Besides having a direct irritating effect on the mucosa, chewing betel quid causes genomic instability. It also interferes with the cell-mediated immunity, which might play a role in the malignant transformation of the oral and oropharyngeal mucous membranes. (4)

Most cases of carcinoma oral cavity present at a later stage, clinical stage III of the disease. This is due to a lot of factors like-the time lapse between the onset of cancer signs and symptoms to coming in contact with a general practitioner, then time required to report at a tertiary care centre, where the patient undergoes further investigations and later the time required to reach a definite diagnosis and finally definite treatment is initiated. This time in most cases is around 6 months. This is most commonly due to-lack of awareness of the cancer symptoms, belief that the symptoms would go away, absence of pain, financial problems, and nobody to accompany (5).

The depth of the tumour invasion is a better prognostic marker compared to the size of tumour. Tumours with higher grades and depth of invasion of more than 5 mm should be considered for adjuvant chemotherapy. Perineural invasion, as a histopathologic feature of some squamous cell carcinomas of the oral/ head and neck region is associated with aggressive tumor behavior, disease recurrence, and increased morbidity and mortality. (6)

In the present study, CT imaging gave under staging of the size of tumour, and overstaging of the nodal status when it was compared to the final HPE report.

Bony involvement is better detected in CT scan compared to MRI. Soft tissue involvement is better detected in MRI when compared with CT scan. Gold standard for depth of invasion of tumour is best assessed by final histopathology report. (7)

In this study, the sensitivity of CT scan in detecting tumour stage T1 - 66.7%. The specificity of CT scan in detecting tumour stage T3 – 92.6%. The sensitivity of CT scan in detecting N2 nodal status is 100%. The specificity of CT scan in detecting N0 nodal status 100%.
However, CT scan is the basic modality for planning the surgical management,because CT scan gives a better understanding of bony involvement.

The limitations of the present study are small sample size study. So, the results obtained needs further evaluation in larger cohort studies. Additional MRI would have been a better imaging modality to detect the depth of invasion; but could not be done in our study because of the financial constraints of the patients.

CONCLUSION

These observations showed that apart from providing nodal status and the size of tumour in cases with carcinoma oral cavity, CT scan findings, overall, over-staged the disease when compared with the final histopathological report. Clinically 43.3% patients were diagnosed to have stage III disease. CT scan detected 42.7% cases to have T1 disease; whereas histopathology report was suggestive of T2 disease.

CT scan detected 71.4% cases to have N2 nodal involvement, whereas histopathology report was suggestive of N0 nodal involvement. (owing to all enlarged ln detected, including infective etiology).

In this study, most patients were found to have stage I disease (66.7% cases) in the final histopathology report; whereas CT scan detected most cases to be stage III disease.

To conclude, CT scan findings under-staged the 'T' stage and over-staged the 'N' stage, leading to an overall upstaging of the disease. However, histopathological examination remains gold standard for assessing the depth of invasion, which is a better prognostic factor than the size of the tumour. (which further enables us to decide upon the need for adjuvant therapy).Hence, the two investigative parameters, supplement each other.

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