



## THE EFFICACY OF CLINICAL EXAMINATION, ULTRASONOGRAPHY AND CT SCAN IN DETECTING MALIGNANT LYMPH NODES OF THE NECK IN ORAL CANCER AND CONFIRMATION WITH FINAL HISTOPATHOLOGY REPORT

### Oncology

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### ABSTRACT

To evaluate and compare the diagnostic accuracy of detecting malignant cervical lymph nodes using Clinical evaluation, CT scan and Ultrasonography and confirmation with histopathology in patients with squamous cell carcinoma. A total number of 30 patients, of both sexes, with carcinoma of different regions of the oral cavity, confirmed with incisional biopsy were included in this study. We found USG to be most sensitive (83.5%), followed by CT (78.3%) and clinical evaluation (63.7%). Similarly, CT scan was found to be most specific (81.5%), followed by USG (78.2%) and clinical evaluation (60.7%).

### KEYWORDS

Squamous cell carcinoma, Lymph node, Ultrasonography, Histopathology

### INTRODUCTION

The major cause of morbidity worldwide is oral cancer and 90% of oral malignancies are squamous cell carcinomas<sup>[1]</sup>. It is the sixth most frequent neoplasm in the world, with an increasing incidence in developing countries<sup>[2]</sup>. Most lymph nodes in the human body are in the cervicofacial area so invasive squamous cell carcinoma of the upper aero-digestive tract has a strong potential for metastatic spread to the cervical lymph nodes. The involvement of the lymph nodes with metastatic deposits is associated with approximately 50% poorer prognosis than for patients with equivalent tumors with no nodal involvement. Hence, status of the regional lymph nodes is the single most important indicator and early detection of nodal involvement has great therapeutic and prognostic implications<sup>[3]</sup>. The effective imaging criterion for the detection of metastatic cervical nodes with CT and MR imaging is increase in nodal size<sup>[4]</sup>. However, size determination alone is not effective enough. The risk of occult metastasis higher than 20% is the most important indication for elective neck treatment. Accurate imaging techniques reduce the risk of undiagnosed metastasis<sup>[5]</sup>. Various tools for the staging of lymph nodes are palpation, CT (Computed Tomography), MRI (Magnetic Resonance Imaging), USG (Ultrasonography), FNAC (Fine Needle Aspiration Cytology) and PET (Positron Emission Tomography). The purpose of this study is to evaluate and compare the diagnostic accuracy of detecting malignant cervical lymph nodes using Clinical evaluation, CT scan and Ultrasonography with histopathology reports in patients with squamous cell carcinoma.

### MATERIALS AND METHODS

The study was conducted in the Department of Oral and Maxillofacial Surgery, College of Dental Sciences. A total no. of 30 patients from June 2016 to November 2018, of both sexes, with carcinoma of different regions of the oral cavity, confirmed with incision biopsy were included in this study. Cervical lymphadenopathy due to other causes were excluded. Patients were clinically examined for palpable nodes by single examiner. Following this, CT scan and Ultrasonography of neck was done and reported by the same radiologist. Following excision of the cervical lymph nodes, the histopathological examination was done and results of each diagnostic modality were compared.

#### Palpation:

The criteria to consider node as metastatic on palpation was firm to hard fixed node more than 10 mm in size.

#### Computed Tomography:

All the patients were examined by CECT of neck with 5mm sections. The criteria used to define a node as metastatic were minimal axial diameter >11 mm or nodes with central hypodensity and peripheral rim

enhancement or conglomeration of three or more lymph nodes.

#### Ultrasonoud:

Ultrasound examination of the neck were carried out with high frequency (7MHz-10MHz) linear transducer. The criteria used to define a node as metastatic were short axis diameter >8 mm, round in shape, with central hypoechoogenicity, loss of hilus, presence of necrosis, irregular margin suggesting extracapsular spread and roundness index (L/S Long Axis/ Short Axis Ratio) = /< 2.

Software used for statistical analysis was Statistical Package for Social Sciences (SPSS) version 17.0 while statistical test used was Pearson Chi-Square test.

### RESULTS

In the 30 cases of squamous cell carcinoma of the oral cavity evaluated; 78 lymph nodes were detected by ultrasonography, CT and clinical evaluation. Of the 78 nodes, 30 (38.50%) of the nodes were metastatic on histopathologic examination and 48 (61.50%) were benign. In our study, we found USG to be most sensitive (83.5%), followed by CT (78.3%) and clinical evaluation (63.7%). Similarly, CT scan was found to be most specific (81.5%), followed by USG (78.2%) and clinical evaluation (60.7%).

### DISCUSSION

Head and neck squamous cell carcinomas spread mostly through lymphatic metastasis. The aggressiveness of the primary tumour is reflected by the rate of metastasis and is an important prognosticator<sup>[8]</sup>. Accurate radiologic imaging could potentially allow for conservative approach if the risk of occult metastatic disease could be reduced to 20%<sup>[9]</sup>.

The first line method in evaluating metastatic cervical lymphadenopathy is by clinically palpating the lymph nodes. In our study palpation results are comparable to various studies where they have got a sensitivity of 79.5% and 92.30% respectively<sup>[6,10]</sup>. The high sensitivity of palpation is attributable to the use of physical characteristics such as size and consistency. False positive results are inevitable as reactive lymph nodes can also achieve the same dimensions as metastatic nodes. The specificity of 60.7% for palpation in our study can be comparable to previous studies<sup>[10,11,12,13]</sup> ranging from 60–86% as reported in the literature.

To determine neck metastasis CT has been used since 1981 though there is controversy about usefulness. In 1990, Van den Brekel et al. proposed the radiologic criteria in CT for assessing cervical metastasis. Based on their study we used size criterion of 11mm, rim enhancement and central necrosis which is similar to the criteria

suggested by Sarvanan K et al. in 2002<sup>[6]</sup>. Unfortunately, necrosis is quite rare in small nodes. Although very small irregularities in contrast enhancement are present, it is difficult to distinguish it from artifacts or anatomic irregularities. So, size of nodes plays an important role in assessing their nature<sup>[8]</sup>. The specificity of 81.5% for CT in our study can be compared to previous studies<sup>[9,10,12]</sup>. The specificity for CT ranges from 68%–92.30% in the literature. CT can show the primary tumour with its local extensions and documentation is possible. Disadvantages being its cost, radiation, also an invasive technique due to injection of contrast<sup>[14,15]</sup>.

USG has got the highest sensitivity of 83.5% and second lowest specificity of 78.2% in our study indicating that it can detect more number of cases but lacks the ability to confirm it. The detection of more number of lymph nodes however inevitably leads to lower specificity and as the differentiation between reactive and metastatic is based on morphologic criteria, this leads to low specificity<sup>[14]</sup>. It is economical, widely available, absence of radiation, lack of need for a contrast medium and ability to easy on-screen node measurements makes USG advantageous over others. Also, it can be used for frequent routine follow-up. It has disadvantages like primary tumour is seen infrequently and documentation is difficult<sup>[7,8,15]</sup>. Differentiation between benign and metastatic nodes is not possible as far as ultrasound, CT and MRI are concerned. Although several criteria have been developed for this purpose, specificity of all imaging modalities is low. The major advantage of USG is that it can be combined with FNAC. This procedure takes less time for each node, while CT guided aspiration is time consuming and costly<sup>[13]</sup>. With the introduction of US-FNAC; its high sensitivity can be combined with the high specificity of cytologic examination<sup>[14]</sup>. It can detect more number of positive cases and high negative predictive value indicating that, probability of predicting negative node as actually negative is high. To reliably select patients who do not need elective treatment, criteria with a high negative predictive value should be chosen.

## CONCLUSION

In our study the sensitivity of CT was less compared to USG. Also, none of the diagnostic methods showed high sensitivity and specificity individually. Thus, we conclude that by combining the ability of USG to detect more number of positive cases (high sensitivity) and ability of FNAC in confirming those (high specificity) makes the most accurate method for assessment of neck in oral squamous cell carcinoma. Experience and skill of the ultrasonographer and cytopathologist are prerequisites for good results. So, along with the routine clinical examination of the neck US-FNAC should be carried out preoperatively in all the patients. Our study has small sample size, so further study is required before its utility can be accurately assessed in the evaluation of lymph node metastasis for surgical management of neck.

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