

Evaluation of cervical lymph node metastasis in head and neck cancers

Abstract

Introduction: Head and neck cancers form around 50% of all the cancers. 1 In India, it constitutes about 30% of all cancers. 2 It is the sixth most common cancer among all cancers in the world. 3 Squamous cell carcinoma is the most common malignant tumor found in the head and neck region. 4 Lymphatic spread is considered as the most important mechanism of the spread of the head and neck cancers. 5 The rate of metastasis to cervical lymph nodes tells us about the aggressiveness of the primary tumor. The presence of cervical lymph. In this study we compared the diagnostic accuracy of clinical palpation and CT scan of the cervical lymph nodes with cytology for evaluation of lymph node metastasis.

Methodology: this study has been carried out on 60 consecutive patients with a histologically proven non cutaneous head and neck cancer. Every patient was subjected to clinical examination for cervical lymph nodes, cytological study, and radiological assessment by computerized tomography. Ultimately, clinical, computerized tomography, cytological and histopathological data from the surgically treated subjects served as our database. Statistical analysis has been performed using the sensitivity, specificity, Positive Predictive Value (PPV) and Negative Predictive Value (NPV). Through our study, we have compared our results and conclusion with previous such studies.

Results: The sensitivity of physical examination in detecting cervical lymph node metastasis in our study is 82.9%, the specificity is 69.2%, and the positive predictive value is 90.6%, while negative predictive value is 52.9%. The sensitivity of CT scan in detection of cervical lymph node metastasis in our study is 97.8%, the specificity is 84.6%, and the positive predictive value is 95.8%, while negative predictive value is 91.6%.

Conclusion: CT scanning is better than physical examination in evaluating lymph node metastasis; hence we should not rely upon physical examination alone.

Keywords: ct scan, ppv, positive predictive value, npv, negative predictive value, head and neck cancers, lymph node

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Nitin Arora, Jyoti Singh, Jai Lal Davessar

Journal of Otolaryngology ENT Research GGS Medical College, India

Correspondence: Nitin Arora Journal of Otolaryngology ENT Research GGS Medical College, India, Tel 08427646364, Email drnitinarora89@gmail.com

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Introduction

Head and neck cancers forms around 5-50% of all the cancers.¹ In India, it constitutes about 30% of all cancers.² It is the sixth most common cancer among all cancers in the world.³ Squamous cell carcinoma is the most common malignant tumor found in the head and neck region.⁴ Lymphatic spread is considered as the most important mechanism of the spread of the head and neck cancers.⁵ The rate of metastasis to cervical lymph nodes tells us about the aggressiveness of the primary tumor. The presence of cervical lymph node metastasis in lymph reduces the 5-year survival rate by about 50%.⁶ One of the most important prognostic factors in head and neck cancer is the presence or absence, level and size of metastatic neck disease. Many tumors within the head and neck will at some stage metastasize to lymph nodes and there are a number of factors that control the natural history and spread of disease.⁷

Accurate pretherapeutic staging is paramount to successful treatment of head and neck cancer. The appropriate diagnosis of the presence of metastatic node is very important for the management of head and neck cancer. The possibility of early detection and treatment of the head and neck cancer shows a great potential for improving the quality of life for these cancer patients and a better prognosis.⁸ In this study we compared the diagnostic accuracy of clinical palpation and CT scan of the cervical lymph nodes with cytology for evaluation of lymph node metastasis.

Methodology

Methodology this study has been carried out on 60 consecutive patients with a histologically proven non cutaneous head and neck cancer. Every patient was subjected to clinical examination for cervical lymph nodes, cytological study, and radiological assessment by computerized tomography. Ultimately, clinical, computerized tomography, cytological and histopathological data from the surgically treated subjects served as our database. Statistical analysis has been performed using the sensitivity, specificity, Positive Predictive Value (PPV) and Negative Predictive Value (NPV). Through our study, we have compared our results and conclusion with previous such studies.

Inclusion criteria

1. Age group 21 to 70years
2. Primary confined to upper aero digestive tract
3. Histopathologically proven malignancy

Exclusion criteria

1. Previously irradiated patients
2. Previously operated
3. Distant metastasis present
4. Co morbid conditions making them unfit for GA

5. Patients without the written consent

CT scan- The lymph node diagnosis is positive for metastasis if following Criterias are met.⁹

- Lymph node with size greater than 1cm except level II, where lymph
- Node greater than 1.5cm is considered positive.
- Lymph node with central necrosis and peripheral rim enhancement
- After intravenous contrast.
- Spherical in shape.
- Three or more lymph nodes in first drainage site.
- Extra capsular spread of disease.
- In Neck examination -When nodes are palpated we look for the following signs of malignancy
- Number of nodes and laterality-contralateral nodes have poorer prognosis
- size – abnormal size is considered as
- size greater than 1.5cm in jugulodigastric
- size greater than 1cm else where
- consistency –which is hard in metastasis
- discrete or matted nodes
- tenderness
- Fixity to the overlying skin or deeper structures-seen in malignancy.

Results

The sensitivity of physical examination in detecting cervical lymph node metastasis in our study is 82.9%, (Table 1) the specificity is 69.2%, and the positive predictive value is 90.6%, while negative predictive value is 52.9% (Table 2). The sensitivity of CT scan in detection of cervical lymph node metastasis in our study is 97.8%, the specificity is 84.6%, and the positive predictive value is 95.8%, while negative predictive value is 91.6%.

Table 1 Comparison of Physical Examination with Cytological Examination (Fnac) Of the Cervical Lymph Nodes

	Cytological (Positive)	Cytological (Negative)	Total
Physical Examination (Positive)	39	4	43
Physical Examination (Negative)	8	9	17
Total	47	13	60

Table 2 Comparison of CT scan And Cytology (Fnac)

	Cytological (Positive)	Cytological (Negative)	Total
CT Scan (Positive)	46	2	48
CT Scan (Negative)	1	11	12
Total	47	13	60
Sensitivity	97.80%		
Specificity	84.60%		
Positive Predictive Value	95.80%		
Negative Predictive Value	91.60%		

Discussion

The appropriate diagnosis of the presence of metastatic node is very important for the management of head and neck cancer. The possibility of early detection and treatment of the head and neck cancer shows a great potential for improving the quality of life for these cancer patients and a better prognosis.⁸ In our study we found that the sensitivity of CT scan in detection of cervical lymph node metastasis in was 97.8%, the specificity was 84.6%, and the positive predictive value was 95.8%, while negative predictive value was 91.6%. The sensitivity of physical examination in detecting cervical lymph node metastasis in our study was 82.9%, the specificity was 69.2%, and the positive predictive value was 90.6%, while negative predictive value was 52.9%.

Our study is supported by the similar studies done by Sureshkannan, John, Geetha et al.,¹⁰⁻¹² Sureshkannan et al.,¹⁰ demonstrated a sensitivity of 68.7% and specificity of 87.5% for physical examination Geetha et al.,¹² reported sensitivity for CT scan 50% and specificity 100%, while they reported sensitivity 83% and specificity 50%, for physical examination John C Watkinson¹² in 1997 conducted a meta-analysis of CT versus physical examination using a 15 review with 647 neck dissections showed computerized tomography to have a sensitivity of 84% with a specificity and overall accuracy of 83%. This compared with physical examination which had a sensitivity of 74%, specificity of 81% and an overall accuracy of 77 % Merritt RM et al.,¹¹ reported the sensitivity, specificity, negative predictive value, positive predictive value for palpation are 64%, 85%, 74% and 78% respectively. Respective values for CT for sensitivity, specificity, negative predictive value, positive predictive value 81%, 96%, 85%, 90% in their study.¹³

Conclusion

CT scanning is better than physical examination in evaluating lymph node metastasis; hence we should not rely upon physical examination alone. So ENT doctors working in small centers should always refer patient to higher center for CT scanning.

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Conflicts of interest

Author declares there are no conflicts of interest.

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