

DIAGNOSTIC PERFORMANCE OF SONOGRAPHY AND COMPUTED TOMOGRAPHY FOR LYMPH NODE METASTASIS IN PATIENTS WITH HEAD AND NECK MALIGNANCY

Ashraf Hamza Taha¹, Alaa Al-Din Hazem Gaafar¹, Hanan Yehia Tayel², Sherif Abd Elmonem Shama³,
Zeinab Ramadan Ibrahim Morshedy¹

Department of Otorhinolaryngology¹, Department of Pathology², Department of Radiodiagnosis and Intervention³
Faculty of Medicine, Alexandria University

Introduction

The majority of head and neck squamous cell carcinoma (HNSCC) is locoregional in nature. Regional metastasis (N+) presence is critical for management, staging and prognosis. Early stage (I) head and neck tumors can be transformed to stage (III) or even stage (IV) if there is a single lymph node metastasis. Cervical lymph nodes metastasis can decrease the survival rate up to 50 %. Laboratory data and clinical examinations are unspecific and do not give satisfactory results in detecting lymph adenopathy. Modern imaging modalities such as ultrasound (US) and computed tomography (CT) allow reliable detection of cervical lymph nodes. According to recent studies, a sizable fraction of occult metastases are too little to raise suspicion using any of the imaging methods that are currently available. Pathological examination of the contents following neck dissection is the most precise method for staging the N0 neck in HNSCC.

Aim of the work

The aim of this study is to assess the diagnostic efficacy of sonography and computed tomography for diagnosing cervical lymph node metastasis among patients with head and neck malignancy in correlation to pathological results of neck dissection specimens.

Patient and methods

This prospective study included 30 patients with head and neck malignancy who underwent neck dissection at the department of Otorhinolaryngology, Alexandria Main University Hospital, University of Alexandria between 2 November 2023 and 10 December 2024. The study compared the preoperative neck imaging findings with the postoperative pathological results. All patients were subjected to the following:
Radiologic assessment focused on: • High resolution sonography of the neck lymph nodes the day before surgery by using 2D doppler ultrasound.

• Computed tomography of the neck with IV contrast in the same week of the operation. Histopathological study
All specimens of neck dissection had been sent for pathological study to allow correlation between histopathological findings and preoperative imaging results.

Results

Histopathological examination of the studied lymph nodes
Ten (33.3%) out of the thirty patients who presented with head and neck cancer proved to have histopatholgic positive lymph node metastasis. Four (40%) patients out of this ten who have malignant lymph nodes show extra nodal extension on histopathological examination.

Table (1): Extranodal extension in histopathological examination of malignant lymph nodes

	No.	%
extra nodal extension		
Yes	4	40
No	6	60

Findings of the preoperative radiological examination

1.Sonographic examination:

Evaluating the ultrasound results revealed that three(10%) cases were suspicious for malignancy and twenty seven(90%) cases were free. Two cases out of the three suspicious are confirmed to be malignant on histopathological examination.

2.Computed tomography examination:

Reviewing the results of the computed tomography revealed that nine cases were suspicious for malignancy and twenty one cases were free. All the nine suspicious cases were confirmed by histopathology. Negative nodes were furtherly assessed by pan cytokeratin immunostaining (to spot micro metastasis).

Table (2): Agreement for US and CT(sensitivity, specificity and accuracy)

	Pathology				Sensitivity	Specificity	PPV	NPV	Accuracy
	Benign (n = 20)		Malignant (n = 10)						
	No.	%	No.	%					
US									
Benign	19	95.0	8	80.0	20.0	95.0	66.67	70.37	70.0
Malignant	1	5.0	2	20.0					
χ^2 (p)	1.667 (0.197)								
CT									
Benign	20	100.0	1	10.0	90.0	100.0	100.0	95.24	96.67
Malignant	0	0.0	9	90.0					
FET (p)	25.714* (<0.001*)								

Conclusion

•Although the ultrasound is available, safe and sheep technique, it is limited in assessment of the deep cervical lymph nodes notably those deep to carotid sheath and retropharyngeal lymph nodes.
•In the current study CT is more accurate and sensitive, and thus, was considered to be a better imaging modality for diagnosing metastatic cervical nodes in head and neck malignancies. However, for the diagnosis of cervical lymph node metastases, histopathological examination is still the gold standard.