Detection of Primary Sites in Cerviacal Lymph Nodes Metastasis

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ABSTRACT

Background: Metastatic cervical lymphadenopathy is commonly encountered in adult and elderly population in otolaryngological practice. Ignorance, illiteracy, lack of proper health care education as well as lack of proper orientation of the clinicians regarding management of mitotic neck node have enabled the patients to suffer from morbidity and mortality.

Objectives: The purpose of this study was to detect variable primary sites which mostly metastasize to different neck nodes.

Methods: This cross-sectional study that was conducted among purposively selected 60 patients with metastatic cervical lymph node in the Department of Otolaryngology & Head-Neck Surgery of Combined Military Hospital Dhaka from July 2021 to June2022. Data were collected in pre designed data collection sheet by taking history, clinical examination, investigations and surgical treatment. Histopathological (from fine niddle aspiration cytology (FNAC), punch/incisional biopsy or examination under Anesthesia and direct Laryngoscopic biopsy) reports were collected.

Result: Lesions in primary site was detected in 88.53% of study population. Out of these 81.13% cases were squamous origin and rest had been originated from non-squamous epithelium. Most common primary site were detected as from larynx. Males were affected more in comparison to female and age of cases were in between 20 years to 90 years. Metastatic lymph nodes were found single sided in 81.67% cases whether both sided were present in 16.67% patients of Ca-larynx. Among the cases single Lymph node involvement was determined in 36.6% & multitudinous in 63.33%. Cervical lymph nodes of level–II involvement were mostly found which was about 40% and then we found level II+I neck nodes involvement about 30%.

Conclusion: Early presentation and appropriate modalities should be taken to diagnosed the enlarged neck lymph node for effective intervention/treatment specially older people.

Keywords: Metastatic lymph node, FNAC, histopathology, Combined Military Hospital Dhaka.

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INTRODUCTION

The usual characteristics of any malignant diseases are their capability for local or distant metastasis. To find out the exact reason behind that a lot of research work had been done.[1] Metastasis is not so uncommon attribute for a malignancy. Different tumours represent variable characteristics. Some tumour tends to invade locally extensively before they metastasize whether few show early metastasis with the course of disease process.[2] Appearance of neck node or loco regional involvement is a predictor of worse prognosis for few squamous cell carcinomas in head –neck region.[3] As there is abundant lymphatic channel with numerous lymph nodes in cervical region which have the propensity to be involved through the disease process of head-neck malignancy.[4]

The appearances of lymph node metastasis where primary sources may be known or unknown are common phenomenon for head-neck surgeons of different hospitals. Usually most of the cases primary sources could be identified like tonsils, tongue, larynx, nasopharynx, hypopharynx, paranasal sinuses. For metastatic cervical lymph node five-year survivalists' rate is about fifty percent, but this rate may be declined when there are multiple neck nodes involvements or extra nodal disseminations of the disease process.[5] Previously for more progressive diseases distant metastasis was not so common, but now a days scenario has been changed. Due to remaining untreated or inadequately treated, primary diseases may proceed for distant metastasis which results to fatal outcome.[6] This can be minimized by prompt evaluation and proper adequate treatment of primary source and also the metastatic neck nodes can control the diseases loco regionally that may result to reduction of further distant metastasis and also improvement of overall survival rate in the long run.

It has been found that by proper history taking and thorough physical examination, preliminary sites can be identified in about 60% of metastatic neck node cases.[7,8,9] Confirmation of the diagnosis can be intensified by modern imaging techniques, endoscopic evaluation and biopsy with histopathological examination.

Metastatic cervical lymphadenopathy is commonly encountered in adult and elderly population in otolaryngological practice. Ignorance, illiteracy, lack of proper health care education offered to general people and lack of proper orientation of the clinicians regarding management of metastatic neck node have enabled the people to suffer from more morbidity and mortality. Though the presentation is very common yet there had been very few studies regarding metastatic neck node in our country till today. Since the site, number, size and extent of lymph node metastases regarded as the most important prognostic factor in head and neck cancer. So, it is necessary to have a proper broad-based study of metastatic neck disease. In this study we aimed to analysed different head-neck cancer that metastasize to cervical lymph nodes, age & sex wise distribution, clinical symptoms presented by metastatic lymph node.

MATERIALS AND METHOD

This Cross-sectional study was conducted in the Department of Otolaryngology-Head and Neck Surgery, Combined Military Hospital (CMH) Dhaka between July 2021 to June 2022. Purposively selected 60 patients who reported with metastatic cervical lymph node with known or unknown primary malignancy as well as both squamous and non-squamous origin obtained from cytopathology or histopathology during the study duration were included in the study. Ethical clearance was obtained from the ethical review committee of Armed Forces Medical Institute, Dhaka. Data were collected from the patients with

the help of structured questionnaire which includes particulars of the patients (name, age, sex, blood group), medical records, clinical examination finding and histopathological report. Professional assistance was taken from the head neck oncosurgeons of the department of Otolaryngology-Head and Neck Surgery. Data processing and analyses were performed using the IBM Statistical Package for Social Sciences (SPSS) version 23 for Windows. Frequencies, percentage, mean and standard deviation (SD) were used for descriptive statistics. Pearson's chi-square test was used to examine the associations between independent and dependent variables. A two-tailed $p<0.05$ was considered statistically significant.

RESULTS

Among the respondents, highest (63.33%) incidence of metastatic neck node were in 41-50 years age group which was followed by 31-40 years group (28.33%) with male preponderance (78.33%). (Table 1)

TABLE-I: Demographic Distribution (Age and Sex) of Metastatic Neck Node Cases

Attribute	No. of cases	Percentage (%)
Age group in years		
20-30	05	8.33
31-40	17	28.33
41-50	38	63.33
Sex		
Male	47	78.33%
Female	13	21.67

Out of 60 patients 88% had metastatic neck node of known primary site were detected among which 81% were from the surface epithelium of upper autodigestive tract and rest were form a non-squamous origin. Among the tumors of squamous origin, larynx (36.66%) is the most common site to present with metastatic neck node followed by pyriform fossa (15%) and nasopharynx (6.67%). While among the tumors of non-squamous origin, thyroid gland (13.33%) shows higher spread of malignancy to regional lymph nodes followed by parotid gland (3.33%). (Table 2)

TABLE-II: Distribution of cervical neck node with known primary sites (n=53)

Primary site	No. of cases	Percentage (%)
Larynx	22	36.66
Pyriform fossa	09	15.00
Nasopharynx	04	06.67
Base of the tongue	03	05.00
Buccal mucosa	02	03.33
Oral tongue	01	01.67
Nose	01	01.67
Tonsil	01	01.67
Thyroid gland	08	15.09
Parotid gland	02	03.77

In regards to the clinical presentation, enlargement of lymph node was present among all the cases which was followed by dysphagia (43.33%), hoarseness of voice (38.33%), respiratory distress (13.33%), stridor (8.33%), referred otalgia (8.33%), pain in throat (8.33%), nasal obstruction (6.67%), epistaxis (5%), severe headache (5%), dysarthria (5%) among others.

As per the distribution and status of involved lymph node, unilateral involvement was in 81.67% cases, bilateral in 16.67% and contra lateral in 1.66% cases. In 63.33% cases, multiple node nodes were involved with hard consistency in 53.33% cases, firm to hard 40% and firm in only 5% cases. In 60% cases, the affected lymph nodes were mobile and rest 40% were fixed. In regards to the size of the lymph node, 26.67% were <3 cm, 33.33% between 3-6 cm and 40% were >6 cm. In 40% cases, level II region were mostly involved which was followed by level II+III (30%). Highest (40%) cases were diagnosed as stage N2. (Table 3).

TABLE-III: Distribution and status of involved lymph node

Attribute	No. of cases	Percentage (%)
Site of involvement		
Unilateral		81.67
Bilateral		16.67
Contralateral		1.66
Number of nodes involved		
Multiple node		63.33%
Single node		36.60
Consistency of the involved node		
Hard		53.33
Firm to hard		40.00
Firm		5.00
Soft		1.67
Mobility of the node		
Mobile		60.00
Fixed		40.00
Size of the node in cm		
<3	16	26.67
3-6	20	33.33
>6	24	40.0
Level of involved nodes		
Level II	24	40.00
Level II+III	18	30%
Other levels (II+III+IV)	18	30%
Staging		
Stage N1		33.33
Stage N2		40.00
Stage N3		26.67

Primary Sites Having Unilateral and Bilateral Presentation [n=60]

In regards to the primary site with unilateral or bilateral involvement, bilateral neck nodes were found in 10 (16.67%) cases out of which 30% was found in Ca- larynx and 30% with unknown primary which was followed by Thyroid malignancy (20%), Ca-nasopharynx (10%) and base of the tongue (10%). (Figure 1)

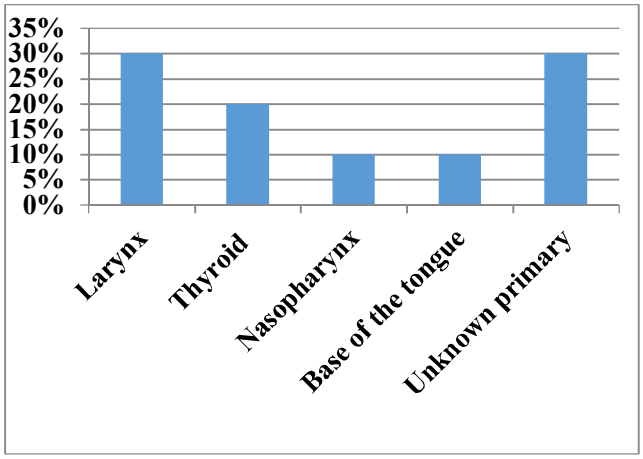

Figure-I: Primary sites of Bilateral neck metastases (n=10)

DISCUSSIONS

Neck node metastasis is a common scenario globally. Due to lack of awareness regarding the disease process maximum disease remain undetected primarily and with the passage of times loco-regional, sometimes distant metastasis occurred. Sometimes patient present with metastatic neck node but primary source of origin remained unknown. It is quite impossible to show the exact picture regarding the incidence of metastatic neck node due to a very few studies were carried out on this ground.

In our study, among the 60 cases with male predominates (47 cases, 78.33%) with an age range varies in between 20 to 90 years, but more frequency was noted among the male patient over 40 years. One study of our country also showed male predominance about 81.85% over female 18.75% and male female ratio was 4.3:1, all cases were over 40 years.[10] Another study resembled same picture 85.71% male, 14.29% female and cases were from 4th & 5th decade of life.[9] we also see the same result in a study in abroad male 74.70% and female 25.30%.[11]

FNAC was used as a diagnostic tool to differentiate between the histopathological features like origin of tumour from squamous or

non-squamous epithelium. Levelling off involved nodes were done as per Memorial Sloan Kettering Hospital. Staging of the disease was carried out in accordance with AJCC & UICC.

Mobility of the affected lymph node was found restricted in 25cases where lymph nodes remain mobile in 35 cases. Different studies of our country represent variable fixity ranging from 33%-39% whether mobility was 57%-61%.[9, 13] fixity and mobility of lymph node usually depend on their time of presentation. Late presentation makes the disease more aggressive.[11, 12]

In the middle of primary sites about 43 cases which is 81.13% developed from squamous epithelium of upper aerodigestive tract where non squamous source was found in 10 (18.87%) cases. Most frequent non squamous source were Thyroid gland (15.09%) & Parotid gland (3.77%). However, neck node metastasis from thyroid malignancy is ubiquitous which also reflected in our study. In about 8 cases (15.77%) primary site remained in thyroid gland. Since other study series determined the incidence rate in between 6.25% to 9.5%.[13] As cases were not selected either as per primary site of tumour nor histological type, incidence rate is might higher in our study.

In between the known primaries we found the carcinoma larynx as the most common about 36.66% which metastasize to cervical lymph node. Among subdivision of larynx supraglottic region have more tendencies to lymphatic spread in comparison to other. Supraglottic region have extensive lymphatic channel and can get easy extension through medial wall & pyriform fossa. As lymphatic channels are sparse in glottis and subglottic region, incidence rate is relatively lower. We found four cases of glottis carcinoma and only one case of subglottic carcinoma which metastasized to cervical lymph node.

Study of the series revealed different primary sites also. Such as in 9(15%) cases primary site was Pyriform fossa, where 4 (6.67%) cases metastasis has occurred from tumour of Nasophaynx. 3(5%) cases originated from Base of the tongue carcinoma, On the other hand only one case arise from Oral tongue carcinoma. Others are from carcinoma of Buccal mucosa (3.33%) 2 cases, Sinunasal malignancy and Tonsil each for one case about 1.67%.

Unilateral disease was presented by 49(81.66%) cases where presentation was bilateral in 10(16.66%). Also, there was contralateral presentation in one case of laryngeal carcinoma. Other studies also represent the high incidence for unilateral diseases which do neck node metastasis.[9,13] G.B Snow with his team did a study in Netherlands that noticed the unilateral lymph node enlargement in 87%, bilateral 8.6% and contralateral 3.6% patients.[12]

In accordance to our study most of the cases presented with lymph node enlargements >6 cm in about 24(40.00%), followed by 3-6 cm in 20(33.34%). <3 cm lymph node size was found only in 16(26.66%) cases. This result is not consistent with G.B Snow and his team as they found 85% patients with <3 cm size lymph node enlargement whether >3cm only in 15% cases.[12] As socio-economic status is poor of our country and illiteracy & ignorance aggravate the disease process, so when the disease come in the accountability it is almost late and disease become aggressive with widespread metastasis.

Single lymph node involvement was demonstrated in 22(36.67%) & 38(63.34%) presented with multiple lymph node enlargement. Our study results comply with G.B Snow's team study.[12] But different pictures also showed in other studies where solitary lymph node enlargement was present in a range of 52.3%-63.2% and more than one in 37.4%-47.5%

cases.[12] this difference might be caused by selection of advanced cases of metastatic diseases.

Hard in consistency found in 32(53.34%) cases, then firm to hard in 24 cases (40.00%) and only 3 cases about 5% presented with firm consistency. Other studies also comply with our result where hard consistency found in most of the cases ranging from 87.3% to 90.7%.[9, 13]

Clinical symptoms showed diversity. Such as dysphagia presented by 26(43.34%) patients, hoarseness of voice 23 (38.34%), respiratory distress 8(13.34%) patients. Some patient also represents stridor, throat pain & referred otalgia each were 5(08.34%). Nasal obstruction was observed in 4(06.66%) patients, epistaxis results in 3(5.0%) patients. Dysarthria was noticed in 3 patients whether trismus & discharging fistula were present in single patients each. Cranial nerve palsy was observed in 7(11.66%) patients. Patients also represent with weight loss and anorexia 7(11.66%). Thyroid swelling and parotid swelling was present in 8(13.34%) and 2(3.34%) respectively. Clinical features presented in this series have the similarity with other publication.[9, 13]

Most frequently involved lymph node was found at level II about 41% and level II+III involvement was present in 29% cases. Other studies demonstrated the similar results that upper jugular lymph nodal chain involvement is most frequent in head-neck lymph node metastasis.[14]

From non-squamous origin thyroid malignancy were more common about 15.09% where 7 cases were Papillary carcinoma and one case was Follicular carcinoma. About 3.77% or 2 cases have aroused from carcinoma of parotid gland where one case was Adenoid cystic carcinoma and other was Mucoepidermoid carcinoma. The result may vary from other studies carried out in home or abroad.

The otolaryngology & head-neck surgery department of Sunnybrook medical centre and Mount science hospital, Toronto has run a study based on metastatic neck disease where carcinoma tongue was responsible for 40% cases and carcinoma larynx for 20% cases. They also determined carcinoma tonsil for 7%, carcinoma palate for 3% and other miscellaneous sites for 10% cases. For a few cases they couldn't detect the primary source.[14] Khartoum Teaching hospital, Sudan did another study which detected most common primary site in Nasopharynx.[18] Two different studies of our country depict highest incidence for neck node metastasis was Pyriform fossa carcinoma[13, 15] followed by carcinoma larynx[9]. The difference might be due to social, cultural and genetical differences between residents of various countries.

In our study, study population was 60 who were suffering from metastatic neck disease. In about 53 (88.53%) cases we could identify the primary site, since in 7 (11.47%) cases primary site couldn't be identified. Another study regarding metastatic neck node which was carried out among our country population shows the almost similar picture like known primary in 93.2% and unknown primary in 6.8% cases.[16] Although two different studies took place in other than our countries depict similar result. Known primary remains 89.3% in the study of Liverpool, England whether study in USA revealed 90%. In case of unknown primary both the studies show about 10%.[17, 18]

In accordance to our study the most common carcinoma that spread to the cervical node is carcinoma larynx for male and in case of female it is carcinoma thyroid. Along with metastatic neck node is diagnosed and treated as cervical lymphadenopathy which is the most common aetiology behind any lymph node enlargement in cervical region for adult.[13, 19] As there is compact

web of capillary and lymphatic channel in neck and few regions of head which is about one third of body's total lymph nodes, metastasis rate of neoplasm is relatively high in cervical region.

Conclusion

Metastatic carcinoma in an adult patient presenting with a rapidly growing, hard, nontender lateral neck mass should be delt with utmost importance for appropriate and time intervention/treatment.

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