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Original Article

Detection of Primary Sites in Cervical Lymphnode Metastases

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Abstract:

Background: *A common denominator to all malignancy is their ability to metastasize. Some tumours have the propensity to extensive local invasion without metastasis, whereas others metastasize early on in their development. With the exception of distant metastasis, the presence of cervical lymph node metastasis is the single most adverse independent prognostic factor in head and neck squamous cell carcinoma.*

Methods*: This was a cross sectional study. Sixty (60) patients were studied in Department of Otolaryngology-Head & Neck Surgery, Combined Military Hospital, Dhaka, from July 2021 to June 2022. The study expected to show different types of head & neck cancer metastasizing to cervical lymph nodes, the age & sex distribution & clinical presentation of metastatic neck node.*

Results: *Incidence of carcinoma pyriform fossa was seen in 9 (15%) cases, 4 (6.67%) cases of metastatic neck node were seen to take origin from nasopharynx, 3 (5%) cases from base of the tongue, and 2 (03.33%) cases from buccal mucosa, 1 (1.67%) case from sinonasal, 1 (1.67%) from oral tongue & 1 (1 .67) case from tonsil. Among the non-squamous origin 8 (15.09%) cases were found to arise from Ca-thyroid of which 7 were papillary thyroid carcinoma and 1 was follicular thyroid carcinoma. 2 (3.77) cases from Ca-parotid of which 1 was adenoid cystic carcinoma and 1 was mucoepidermoid carcinoma.*

Conclusion: *All the data presented in this study may considerably vary with any large series though inflammatory neck disease is very common in our country, one should not forget the possibility of metastatic carcinoma While enlarged cervical node in an elderly patient should always be considered as metastatic until proved otherwise.*

Keywords: *Primary site, cervical lymphnode, Metastatic node, Unknown Primary.*

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Introduction:

A common denominator to all malignancy is their ability to metastasize. Why & how this phenomenon occurs has been the subject of much research & investigation. We do know however that metastasis is not a random event[1]. Some tumours have the propensity to extensive local invasion without metastasis, whereas others metastasize early on in their development[2]. With the exception of distant metastasis, the presence of cervical lymph node metastasis is the single most adverse independent prognostic factor in head and neck squamous cell carcinoma[1,2,3].

Cervical region is very rich in lymphatic supply and containing about 300 lymph nodes which may get involved in the clinical course of head & neck malignant diseases[4].

The metastatic neck node with or without primary source are common presentation in otolaryngology department of different hospitals of Bangladesh. Most of them are known primaries. The known primaries are tonsils, tongue, larynx, nasopharynx, hypopharynx, paranasal sinuses and other than ENT region. The 5 years survival rate of the metastatic neck is by approximately 50%. The survival rate has been noted to reduce further when multiple nodes are involved or extra nodal spread of the disease occurs.[5] With further progression the incidence of distant metastasis, which has always been viewed as being uncommon, also increases dramatically making the disease incurable.[6] So, early treatment of the primary tumour & lymph nodes is essential for good loco regional control & reduction of incidence of distant metastasis & improved survival.

Historically, primary site can be identified by taking comprehensive history & initial physical examination in about 60% of metastatic neck node cases[7,8,9]. However, further evaluation by imaging, endoscopy & biopsy is required for confirmative diagnosis and effective management. A thorough knowledge of neck anatomy, neck lymph node groups is essential to identify the site of primary tumour.

In my study patients were selected from Department of Otolaryngology Combined Military Hospital, Dhaka cantonment, Dhaka for period extending from September 2021 to March 2022. The study expected to show different types of head & neck cancer metastasizing to cervical lymph nodes, the age & sex distribution & clinical presentation of metastatic neck node.

Similar type of study was done previously in home and abroad. My study is designed to compare & analyse the results with those published studies. Possible & causal relationship of my results will be analysed & explained[10].

Materials and methods:

Study design

Cross sectional observational study.

Place of study

Department of Otolaryngology-Head & Neck Surgery, Combined Military Hospital, Dhaka.

Period of study

July 2021 to June 2022

Study population

60 Patients reported with metastatic cervical lymph node in the Department of Otolaryngology-Head & Neck Surgery, Combined Military Hospital, Dhaka

Sample size- 60 patients

Inclusion Criteria

Metastatic neck node with known and unknown primary both squamous and non-squamous origin obtained from cytopathology or histopathology.

Exclusion Criteria

1. Lymphoma.
2. Patients not consenting to the protocol.

Results:

The present study was conducted among the indoor patients of Otolaryngology and Head Neck Surgery wards of Combined Military Hospital, Dhaka from July 2021 to June2022 with an ultimate view to detect the different primary sites metastasizing to cervical lymph nodes.

In this study, 60 patients were randomly selected from Bangladesh Armed Forces and their families. Then according incidence of known and unknown primaries, the histological diagnosis of primary tumour, distribution of known primary sites, age and sex incidence, clinical presentation, level and stage of nodal metastasis and primary sites of bilateral neck metastasis - data were gathered, tabulated, analysed, then the whole collected data were finalized and presented in this research paper.

Incidence of known primary & unknown primary of study population (n=60)

Out of 60 patients 88% had metastatic neck node of known primary and in 12% cases no primary site can be detected. So incidence of metastatic neck node with known primary is eight times more common than that of the unknown primary.

Histopathological diagnosis of primary tumour (n=53)

Out of 53 patients of known primary, in 81% cases primary tumour arise from the surface epithelium of upper autodigestive tract and 19% cases form a nonsquamous origin.

Distribution of known primary sites (n=53)

Among the tumours of squamous origin larynx (36.66%) is the most notorious site to present with metastatic neck node followed by pyriform fossa (15%) and nasopharynx (6.67%). While among the tumours of nonsquamous origin thyroid gland (13.33%) shows higher spread of malignancy to regional lymph nodes followed by parotid gland (3.33%).

Table I

Distribution of 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

Age Incidence of metastatic neck node (n=60)

Among 60 patients highest incidence of metastatic neck node were in 41-50 age group (31.67%). 05 cases (8.33%) were found in age group between 20-30.

Sex distribution of metastatic neck node (n-60)

Out of 60 patients higher incidence of metastatic neck node was found in males (78%) in comparison to females (22%)

Accompanying symptoms on clinical presentation (n=60)

Among the clinical presentation, enlargement of lymph node was present in 60 (100%)

cases. Next to that, 26 (43.33%) patients presented with dysphagia, 23 (38.33%) cases with hoarseness of voice, 8 (13.33%) patients with respiratory distress, 5 (8.33%) patients with stridor, 5 (8.33%) patients with referred otalgia, 5 (8.33%) patients with pain in throat, 4 (6.67%) patients with nasal obstruction, 3 (5%) patients with epistaxis, 3 (5%) patients with severe headache, 3 (5%) patients with dysarthria, 1 (1.67%) with trismas, 1 (1.67%) patient with discharging fistula in neck, 7(11.67%) patients with cranial nerve palsy & 7 (11.67%) patients with anorexia & weight loss, 8 (13.33%) patients presented with thyroid swelling & 2 (3.33%) patients with parotid gland swelling.

Distribution of nodes

Out of 60 patients unilateral involvement were in 81.67%, bilateral in 16.67% and contralateral in 1.66% cases.

No of node involvement

Lymph node involvement was single in 36.6% cases & multiple in 63.33% cases.

Consistency of lymph node

Out of 60 Cases lymph nodes were hard in 53.33% cases, firm to hard 40% Cases, firm 5% Cases & soft 1.67% cases.

Mobility of lymph node

In 60% cases lymph nodes were found mobile & 40% cases were found fixed.

Size of lymph nodes

In this study nodes were found less than 3 cm in 16 (26.67%) cases, 3 to 6 cm in 20 (33.33%) cases & more than 6 cm in 24 (40%)

Level of lymph nodes (n=60)

While leveling of the lymph nodes, most commonly involved lymph node region was found in level II (40%) followed by level II + III (30%).

Table II

Level of affected lymph nodes

Level of lymph node	No. of case	Percentage (%)
Level -I	3	5.00
Level -II	24	40.00
Level -I + II	03	5.00
Level -III	02	3.33
Level - II + III	18	30.00
Level - II + III + IV	05	8.33
Level -IV	01	1.66
Level- II + IV	01	1.67
Level - II + III + IV + V	02	3.33
Level - IV + V	01	1.67

Table III

Sites of cervical Metastatic nodes

Primary site	Unilateral lymph node	Bilateral lymph node
Larynx	5	5
Thyroid	13	6
Nasopharynx	2	8
Base of the tongue	7	3
Unknown primary	5	6

Discussions:

In the present series altogether 60 cases of metastatic neck node had been studied. A primary lesion could be identified in 53 (88.53%) cases however primary sites remained undetected in 7 (11.47%) cases. A study carried out in our country with the metastatic neck node shows 93.2% cases of known primary & 6.8% cases of unknown primary sites[11].

However, two studies carried out abroad showed similar rate of incidence. One in the Liverpool, England showed 89.3% cases of known & 10.3% cases of unknown primary

and another in USA, revealed about 90% cases of known & 10% cases of unknown primary[12,13].

Among the primary sites 43 (81.13%) cases were seen to arise from squamous lining of upper autodigestive tract & 10 (18.87%) cases were having a nonsquamous origin arising from thyroid gland (15.09%) & parotid gland (3.77%).

The study shows that metastasis from thyroid gland carcinoma is not a very uncommon entity. The incidence of metastatic neck node of thyroid origin in other series varied from 6.25% to 9.5%.[14] In this series metastatic neck node of thyroid origin was found in 8 (15.77%) cases. The higher incidence in the present series might be due to the fact that there was no selectivity for either the site of primary tumour or the histological type.

Among the known primary sites highest incidence of metastatic neck node was found with Ca-larynx (36.66%). Most of them were located in supraglottic larynx with either involvement of medial wall or extension into the pyriform fossa which may explain the high rate of metastasis in case of supraglottic growth of larynx. Four glottic and one subglottic growth was seen with neck node metastasis.

Incidence of carcinoma pyriform fossa was seen in 9 (15%) cases, 4 (6.67%) cases of metastatic neck node were seen to take origin from nasopharynx, 3 (5%) cases from base of the tongue, and 2 (03.33%) cases from buccal mucosa, 1 (1.67%) case from sinonasal, 1 (1.67%) from oral tongue & 1 (1 .67) case from tonsil. Among the non-squamous origin 8 (15.09%) cases were found to arise from Ca-thyroid of which 7 were papillary thyroid carcinoma and 1 was follicular thyroid carcinoma. 2 (3.77) cases from Ca-parotid of which 1 was adenoid cystic carcinoma and 1 was mucoepidermoid carcinoma. The studies carried out with metastatic neck node at home & abroad show a diverse picture[15].

In a study with metastatic neck node in the department of otolaryngology, Mount Since Hospital & Sunnybrook Medical Centre, Toronto, 40% cases were found to arise from Ca-tongue, 20% from Ca- larynx, 20% from Ca-floor of mouth, 7% from Ca-tonsil, 3% from Ca-palate & 10% from miscellaneous sites. The absence of selectivity for primary sites was the reason behind it as noted by them[16]. In another study with metastatic neck node in Khartoum Teaching Hospital, Sudan, most common primary site was found to be nasopharynx[17]. It might be due to their social habits and genetic predisposition. Two studies carried out in our country showed highest incidence of metastasis from Ca-pyriform fossa[13,18] while in another study highest incidence was seen from Ca-larynx[9].

In the present study 47 (78.33%) patients were male & 13 (21.67%) were females with a ratio being 3.5:1 of ages ranging from 20 years to 90 years which is in fair agreement with almost all the studies revealing metastatic nodes to be more frequent in males above the age of 40. Five (8.3%) cases presented in second decades. 3 (5%) of which took origin from carcinoma of nasopharynx and 2 (3.3%) from papillary carcinoma of thyroid gland .In a study carried out in our country 81.85% patients were found to be male and 18.75% patients to be female with the ration being 4.3:1 and all were above 40 years of age[10]. In another study out of 21 cases, 18 (85.71%) patients were male & 3 (14.29%) patients were female with highest incidence in 4th and 5th decade[9]. Male predominance is also proved in another study abroad being male 74.7% & female 25.3%[15].

Ca-larynx was found to be most commonly occurring carcinoma spreading to neck node

in males & Ca-thyroid in females. History of smoking was found to be present in 22 (36.66%) males & history of chewing of betel leaves, betel nuts & tobacco in 14 (23.32%) males & 8 (13.33%) female patients. History of taking Hukka (smoke of crude tobacco leaves) was found in a 86 years old patient presented with Carcinoma in pyriform fossa.

Among the clinical features, 26 (43.33%) patients presented with dysphagia, 23 (38.33%) cases with hoarseness of voice, 8 (13.33%) patients with respiratory distress, 5 (8.33%) patients with stridor, 5 (8.33%) patients with referred otalgia, 5 (8.33%) patients with pain in throat, 4 (6.67%) patients with nasal obstruction, 3 (5%) patients with epistaxis, 3 (5%) patients with severe headache, 3 (5%) patients with dysarthria, 1 (1.67%) with trismas, 1 (1.67%) patient with discharging fistula in neck, 7 (11.67%) patients with cranial nerve palsy & 7 (11.67%) patients with anorexia & weight loss, 8 (13.33%) patients presented with thyroid swelling & 2 (3.33%) patients with parotid gland swelling. These findings are in conformity with the findings of other published series[9, 13].

The disease was unilateral in 49 (81.67%) cases, bilateral in 10 (16.67%) cases & contralateral in 1 (1.66%) case of carcinoma of larynx. This is supported by other works done with metastatic neck disease in our country with high incidence of unilateral metastatic neck node[9,13]. A work on metastatic neck disease done by G. B Snow and his team in Netherlands Cancer Institute, Amsterdam ipsilateral enlargement of lymph node was demonstrated in 87%, bilateral in 8.6% & contralateral in 3.6% cases[12].

Lymph node involved was single in 22 (36.6%) patients & multiple in 38 (63.33%) cases. G. B. Snow & his team of Netherlands Cancer Hospital, Amsterdam got 6 (1.3%) cases of single node enlargement & 38.7% cases of multiple lymph node enlargements in their series. The other studies carried out in our country lymph node enlargement were solitary in 52.4%-62.5% cases & multiple in 37.5% - 47.6% cases[9,13]. This picture is not consistent with the findings of present study which might be due to more inclusion of metastatic neck node in advanced stage.[19]

In this study nodes were found less than 3 cm in 16 (26.67%) cases, 3 to 6 cm in 20 (33.33%) cases & more than 6 cm in 24 (40%) cases. But study carried out by G. B. Snow & his team showed enlarged lymph node < 3 cm in 85% cases & >3 cm in size in 15% cases only[12]. This indicates more late presentation of the patients of our country which corresponds with the ignorance, illiteracy & poor socio-economic status of our people.

Lymph nodes were hard in 32 (53.33%) cases, firm to hard 24 (40%) cases, firm 03 (5%) cases & soft 1 (1.67%) cases. In other studies hard & firm to hard lymph nodes were found in 87.5% to 90.5% cases & firm lymph node in 9.5% to 12.5% cases[9,13].

In 36 (60%) cases lymph nodes were found mobile & 24 (40%) cases 33 were found fixed. Mobility of the node varied 57% to 60% & fixity 33% to 40% in studies carried out in Bangladesh.[9,13] In some studies fixity of nodes varied from 16.4% to 29.6% re-presenting their early presentation once again[11,12,13,14].

While levelling of the lymph node most commonly involved lymph node region was found to be level II (40%) followed by level II+III (30%). This is in agreement with most other studies demonstrating that the upper jugular lymph node chain is most commonly involved with head & neck nodal metastatsis.[15,16,17]

In this study, 20 (33.33%) cases fell in stage N_1 8 (13.34%) in stage N_2A 11 (18.33%) in

stage N_2B, 5 (8.34%) in N_2C & 16 (26.66%) patients in stage N_3. The result of this part of study could not be compared due to lack of studies following the same staging of lymph node group after AJCC & UICC[18,19].

Conclusion:

All the data presented in this study may considerably vary with any large series though inflammatory neck disease is very common in our country, one should not forget the possibility of metastatic carcinoma in an adult patient presenting with a rapidly growing, hard, nontender lateral neck mass. While enlarged cervical node in an elderly patient should always be considered as metastatic until proved otherwise. Because delay in the diagnosis will reduce the chance of getting effective treatment with curative intention.

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