

Clinical Profile of Patients with Nodal Metastasis in Neck

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Abstract

Original Research Article

Background: An enlarged neck node often signifies the initial sign of the head and neck neoplastic process. Early diagnosis enhances survival chances. Metastasis is common among these malignancies, but some tumors invade locally without metastasis, while others metastasize early in development. **Aim of the study:** This study aimed to assess the clinical profile of patients with nodal metastasis in the neck. **Methods:** This prospective observational study was conducted at the Department of Otolaryngology and Head-Neck Surgery, Combined Military Hospital, Dhaka, Bangladesh, spanning from July 2007 to March 2009. It included 60 patients with metastatic neck nodes and known or unknown head-neck region primaries. The study employed random selection; data processing, analysis, and dissemination were carried out using MS Office tools. **Results:** The male-female ratio of participants was 3.6:1; about 31.67% were aged 41-50. Known and unknown primary lesions were in 88% and 12% of the cases respectively. Among known primary sites (n=53), 36% were carcinoma of the larynx, 15% pyriform fossa, 13.33% thyroid gland, 6.67% nasopharynx, and 5.00% base of the tongue. Histopathologically, 81.13% arose from the squamous lining of the upper aerodigestive tract, and 18.87% from non-squamous origins like thyroid gland (13.33%) and parotid gland (3.33%). **Conclusion:** Middle-aged males are mainly prone to nodal metastasis in the neck. Carcinoma of the larynx is very common among such cases. In most cases, lesions arise from the squamous lining of the upper aero-digestive tract.

Keywords: Clinical profile, Nodal metastasis, Neck, Cancer, Tumor, Otolaryngology.

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1. INTRODUCTION

On a global scale, head and neck cancer is ranked as the ninth most widespread type of cancer. As reported by the World Health Organization, yearly occurrences of head and neck cancer surpass 0.55 million cases, leading to an estimated 0.30 million deaths annually¹. In the otolaryngology field, the presentation of metastatic neck nodes, with or without primary sites, is common. A notable characteristic of head and neck malignancies is their tendency to metastasize to cervical lymph nodes, rarely involving distant metastases. Cervical lymph node metastasis stands as the single most significant independent prognostic factor in head and neck cancer. The majority of metastatic neck nodes originate from known primary sites like the larynx, hypopharynx, tongue, tonsils, nasopharynx, and other regions. The survival rate is influenced by factors like the primary site, as well as the location, size, and extent of

lymph node involvement. The 5-year survival rate for metastatic neck nodes is roughly 50%. This rate diminishes when multiple nodes are affected or extra-nodal spread occurs. Prompt treatment of both the primary tumor and lymph nodes is crucial for effective locoregional control, lowering the risk of distant metastasis, and enhancing survival^{2,3}. Primary sites can often be discerned through a thorough history and initial physical examination. However, additional confirmation via endoscopy, imaging, and biopsy is essential for precise diagnosis and efficient management. Fine Needle Aspiration Cytology (FNAC) has emerged as a well-established diagnostic tool for assessing enlarged neck nodes. FNAC is cost-effective, minimally invasive, well-tolerated by patients, and can be performed on an outpatient basis, with the advantage of being repeatable^{4,5}. Tobacco use, smokeless tobacco, alcohol consumption, Epstein-Barr virus (EBV), and human papillomavirus (HPV) infection are prominent factors

driving head and neck cancer (HNC). These factors have shown an upward trend, particularly among individuals aged 40 to 55, globally and in Saudi Arabia, in recent years^{6,7}. The objective of this study was to evaluate the clinical characteristics of patients with neck nodal metastasis.

2. METHODOLOGY

This prospective observational study, conducted between July 2007 and March 2009, took place in the Otolaryngology and Head-Neck Surgery department at the Combined Military Hospital (CMH) in Dhaka. It involved 60 randomly selected patients with metastatic neck nodes from diverse age and gender groups. The entire study adhered to the human research principles outlined in the Helsinki Declaration [8] and was carried out following prevailing regulations and the stipulations of the General Data Protection Regulation (GDPR) [9]. Excluded were cases with left supraclavicular or scalene node involvement and possible chest or abdomen origins. Informed consent was obtained from all participants. The study included metastatic neck nodes with both known primary (squamous and non-squamous) in the head and neck region, as well as cases with unknown primaries. After detailed history-taking, patients underwent comprehensive physical examinations, with special attention to the ear, nose, and throat region. Neck assessments focused on primary disease presence, lymph node size, number, level, mobility, and consistency. All patients underwent fine needle aspiration cytology (FNAC) of enlarged neck nodes. Furthermore, blood tests, urine analysis, chest X-rays, and additional imaging were conducted. Specific imaging like X-rays, CT scans, and ultrasounds were performed based on clinical findings. Histopathological examination

confirmed malignancy via tissue samples from primary sites. Biopsies were used for diagnosis in cases of growth in the oral cavity and tongue, while rigid endoscopic procedures under general anesthesia provided diagnosis for other areas. Non-squamous cell carcinoma diagnoses for thyroid and parotid glands were confirmed through FNAC and excisional biopsy. Patients suspected of having occult primary disease underwent pan endoscopy under general anesthesia, with tissue samples taken for histopathological examination. All data were processed, analyzed and disseminated by using MS Office.

3. RESULT

In this study, among the total 60 participants, 78% were male whereas the rest 22% were female. So, the male-female ratio of the participants was 3.6:1. Regarding the age distribution of our participants, we noted that approximately one-third of patients (31.67%) fell within the 41-50 age group. Furthermore, 8.33%, 13.33%, 23.33%, 11.67%, 8.34%, and 3.33% were distributed across the 20-30, 31-40, 51-60, 61-70, 71-80, and 81-90 age groups, respectively. In this study, a primary lesion was identified in 88.33% of cases, however, primary sites remained undetected in 11.67% of cases. In the context of known primary sites, the highest frequency of metastatic neck nodes was observed in cases of laryngeal carcinoma, accounting for 22 cases (36.66%). A significant portion of these cases was centered in the supraglottis of the larynx. Carcinoma originating from the pyriform fossa contributed to 15% of instances, while 6.67% of cases displayed metastatic neck nodes stemming from the nasopharynx. As per the histopathological diagnosis of the primary tumor of the participants, we observed that the majority of the patients (81%) had squamous tumors and only 19% had non-squamous tumors.

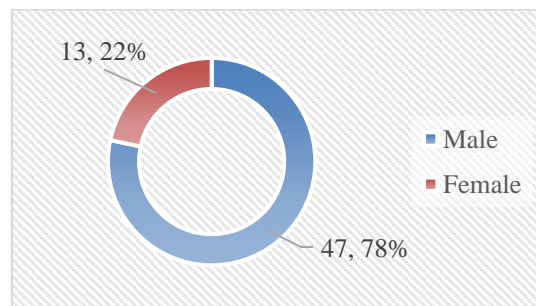


Figure 1: Distribution of participants as per gender (N=60)

Table 1: Distribution of participants as per age (N=60)

Age (in years)	n	%
20-30	5	8.33
31-40	8	13.33
41-50	19	31.67
51-60	14	23.33
61-70	7	11.67
71-80	5	8.34
81-90	2	3.33

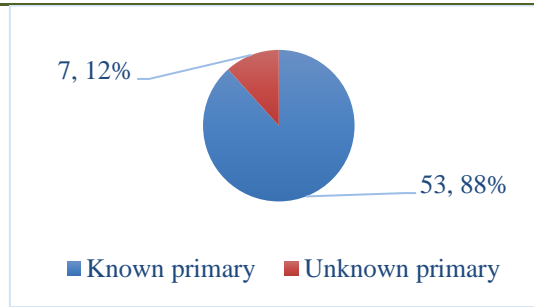


Figure 2: Incidence of known primary and unknown primary lesions (N=60)

Table 2: Distribution of known primary sites (n=53)

Primary Site	n	%
Larynx	22	36.66%
Pyriform fossa	9	15.00%
Thyroid gland	8	13.33%
Nasopharynx	4	6.67%
The base of the tongue	3	5.00%
Buccal mucosa	2	3.33%
Parotid gland	2	3.33%
Oral tongue	1	1.67%
Nose	1	1.67%
Tonsil	1	1.67%

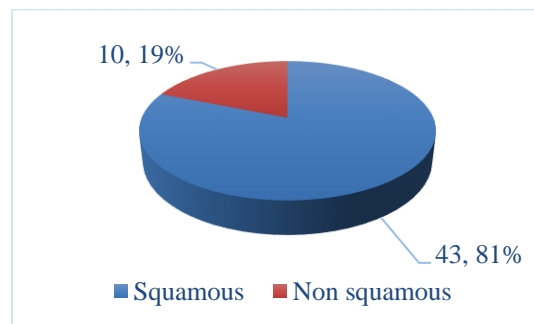


Figure 3: Histopathological diagnosis of primary tumor (n=53)

4. DISCUSSION

This study aimed to assess the clinical profile of patients with nodal metastasis in the neck. Metastatic cervical lymph nodes represent the prevailing cause of cervical lymphadenopathy among adults and the elderly¹⁰. They can emerge from diverse primary sites, with 85% originating above the clavicle and 15% below¹¹. Approximately 90% of supraclavicular primaries are squamous, primarily deriving from the surface epithelium of the upper aerodigestive tract. Prominent presentation sites encompass the larynx, pyriform fossa, tonsils, base of the tongue, and nasopharynx. While the majority of supraclavicular primaries are squamous, a minority may arise non-squamous from sources like the thyroid gland, salivary glands, and head-neck skin^{11,12}. In up to 10% of cases, primary sites might remain elusive. Carcinoma originating in the nasopharynx or oropharynx is recognized for initially manifesting with neck node metastasis, while the primary site goes undetected¹³. In

this study, a primary lesion was discerned in 88.33% of cases, with primary sites eluding detection in 11.67% of cases. Among the total 60 participants, 78% were male whereas the rest 22% were female. So, the male-female ratio of the participants was 3.6:1. As per the age distribution of our participants, we observed that approximately one-third of patients (31.67%) fell within the 41-50 age group. In another study¹⁴, it was reported that among males, the highest incidence of metastatic neck node was found in the age group of 50-60 years whereas among females, it was in the age group of 61-70 years. Metastatic involvement of neck nodes constitutes an early indication of malignancy, particularly in the head and neck region. Over half of these nodes are distributed in the neck, draining the head and neck area. This region is characterized by an intricate capillary network of lymphatics, contributing to the swift spread of malignancy to the neck. Among patients, lymph node involvement was solitary in 360 (94.7%) cases and multiple in 20 (5.3%) cases. A study on metastatic neck

disease conducted at the Netherland Cancer Institute, Amsterdam, found that 61.3% of cases exhibited single-node enlargement, while 38.7% displayed multiple-node enlargement¹⁵. As per the histopathological diagnosis of the primary tumor of the participants, we observed that the majority of the patients (81%) had squamous tumors and only 19% had non-squamous tumors. In a study,²⁰ Among the diverse histological types in HNC, including blastomas, lymphomas, sarcomas, and neuroendocrine tumors, squamous cell carcinoma predominates and constitutes over 90% of HNC cases. Histologically, head and neck squamous cell carcinoma is the most frequent subtype of HNC²¹ worldwide. All the findings of this current study may be helpful in further similar studies.

Limitation of the study:

This was a single-centered study with small-sized samples. Moreover, the study was conducted over a very short period. So, the findings of this study may not reflect the exact scenario of the whole country.

5. CONCLUSION & RECOMMENDATION

As per the findings of this current study, we can conclude that laryngeal carcinoma frequently accompanies nodal metastasis in the neck. In the majority of instances, these lesions originate from the squamous lining of the upper aero-digestive tract. Higher metastasis chances correlate with increasing age and male sex. Investigating enlarged neck nodes is vital to exclude metastasis, given limited knowledge of carcinogenesis and tumor spread implications. Progress has been made in comprehending intricate metastatic processes. A solid grasp of anatomy and the detection of cervical metastatic disease are pivotal. Upcoming techniques will aid in detecting primary and metastatic diseases. Treating a patient involves more than addressing a disease; it encompasses reducing patient morbidity and easing financial burdens on both patients and hospitals. Thus, early diagnosis and prompt treatment fulfill these objectives.

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REFERENCES

- Sharma JD, Baishya N, Kataki AC, Kalita CR, Das AK, Rahman T. Head and neck squamous cell carcinoma in young adults: A hospital-based study. *Indian J Med Paediatr Oncol.* 2019; 40(5):18-22. doi:10.4103/ijmpo.ijmpo_252_17
- Al-Fallouji MAR. Cervical lymph nodes, postgraduate surgery. The candidates' guides. 2nd ed. Oxford: Butterworth-Heinemann 1998:376-8.
- Afroz M, Akhtar N, Siddiquee BH. Metastatic Neck Node- A Study of 60 Cases. *Bangladesh Journal of Otorhinolaryngology* 2009; 15(1):26-30. Available at <http://www.banglajol.info/index.php/BJO/article/view/4307>.
- Martin H, Romieu C. Cervical lymph node metastasis as the first symptom of cancer. *Surg Gynecol obstet* 1944; 78:133-59.
- Ahmad SMMU, Huq AHMZ, Joarder MAH et al. Study on nodal metastasis in the neck. *Bangladesh Journal of Otorhinolaryngology* 2008; 14(1):15-22. Available at <https://www.banglajol.info/index.php/BJO/article/view/3275/2747>
- Alsbeih G, Al-Harbi N, Bin Judia S, Al-Qahtani W, Khoja H, El-Sebaie M, Tulbah A. Prevalence of Human Papillomavirus (HPV) Infection and the Association with Survival in Saudi Patients with Head and Neck Squamous Cell Carcinoma. *Cancers.* 2019; 11(6):820. doi:10.3390/cancers11060820
- Elasbali AM, Ahmed HG. A Review on the Etiology of Oral Cancer in Saudi Arabia. *Int J Med Res Health Sci.* 2018;7(6):161-170. <https://www.ijmrhs.com/medical-research/a-review-on-the-etiology-of-oral-cancer-in-saudi-arabia.pdf>. Accessed January 10, 2020.
- World Medical Association. (2001). World Medical Association Declaration of Helsinki. Ethical principles for medical research involving human subjects. *Bulletin of the World Health Organization*, 79 (4), 373 - 374. World Health Organization. <https://apps.who.int/iris/handle/10665/268312>.
- Voigt, Paul, and Axel von dem Bussche. "Enforcement and fines under the GDPR." *The EU General Data Protection Regulation (GDPR)*. Springer, Cham, 2017. 201-217.
- Gleeson M, Browning GB, Burton MJ et al. *Scott-Brown's Otorhinolaryngology, Head and Neck Surgery*, 7th ed. *Ann R Coll Surg Engl* 2011; 93(7):559.
- Hibbert J. *Metastatic neck disease; Scott-Brown's Otolaryngology, Butterworth-Heinemann, Oxford*, 6th ed; 5(17):1-17.
- Wroght D and Kenyon G. *Cancer of the Neck, Scott-Brown's Otolaryngology, Butterworth-Heinemann, Oxford*, 5th ed. 5:315-39.
- Oen AL, de Boer MF, Hop WC et al. Cervical metastasis from unknown primary tumor. *Eur Arch Otorhinolaryngol* 1995; 252:222-8.
- Kapoor C, Vaidya S, Wadhwan V, et al. Lymph node metastasis: A bearing on prognosis in squamous cell carcinoma. *Indian J Cancer* 2015; 52(3):417-24.
- Klop WM, Balm AJ, Keus RB et al. Diagnosis and treatment of 39 patients with cervical lymph node metastasis of squamous cell carcinoma with an unknown primary, referred to the Netherlands Cancer Institute/Antoni van Leeuwenhoek Hospital in the period 1979-98. *Ned Tijdschr Geneesk* 2000; 144(28):1355-60.
- Shozushima M, Suzuki M, Nakasima T et al. Ultrasound diagnosis of lymph node metastasis in head and neck cancer. *Dentomaxillofac Radiol* 1990; 19:165-70.
- Hoang JK, Vanka J, Ludwig BJ et al. Evaluation of Cervical Lymph Nodes in Head and Neck Cancer

- with CT and MRI: Tips, Traps, and a Systematic Approach. *American Journal of Roentgenology* 2013; 200(1):17-25. Available at <http://www.ajronline.org/doi/abs/10.2214/AJR.12.8960>
18. Kaji AV, Mohuchy T, Swartz JD. Imaging of cervical lymphadenopathy. *Semin Ultrasound CT MR* 1997; 18(3):220-49.
 19. D'Souza O, Hasan S, Chary G, et al. Cervical lymph node metastasis in head & neck malignancy- A Clinical /ultrasonographic/ Histopathological comparative study. *Indian J Otolaryngol Head Neck Surg* 2003; 55(2):90-3.
 20. Alsbeih G, Al-Harbi N, Bin Judia S, Al-Qahtani W, Khoja H, El-Sebaie M, Tulbah A. Prevalence of Human Papillomavirus (HPV) Infection and the Association with Survival in Saudi Patients with Head and Neck Squamous Cell Carcinoma. *Cancers*. 2019;11(6):820. doi:10.3390/cancers11060820.
 21. Cruz-Gregorio A, Martínez-Ramírez I, Pedraza-Chaverri J, Lizano M. Reprogramming of energy metabolism in response to radiotherapy in head and neck squamous cell carcinoma. *Cancers*. 2019;11(2):182. doi:10.3390/cancers11020182.