RESEARCH ARTICLE

Frequency of lymphoma among individuals with extra thyroidal neck swellings

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Abstract

Objective: To assess the frequency of lymphoma in patients presenting with extra-thyroidal neck swellings.

Method: The prospective, cross-sectional study was conducted at the Outpatient Department in the Ear-Nost-Throat Unit of Khyber Teaching Hospital, Peshawar, Pakistan, from July to October 2022, and comprised patients of either gender aged 4-75 years presenting with neck swelling or lymphadenopathy. Data was recorded on a standardised proforma, and included history, clinical examination details, contrast-enhanced computed tomography scans of the head and neck, and fine-needle aspiration cytology results. Data was analysed using SPSS 24.

Results: Of the 160 patients, 100(62.5%) were males and 60(37.5%) were females. There were 60(37.5%) patients aged 21-40 years, followed by 40(25%) aged 41-60 years, 30(18.7%) aged 4-20 years and 30(18.7%) aged 60 years and above. Lymphoma was observed in 40(25%) patients. Gender and age were not significantly associated with lymphoma presence (p=0.908 and 0.639, respectively).

Conclusion: The frequency of lymphoma was 25% patients, and it was not significantly different across age and gender lines.

Keywords: Neck swellings, Lymphoma, Extra-thyroidal, Lymphadenopathy, Frequency, Epidemiology, Head and neck neoplasm, Cross-sectional studies. (JPMA 76: 826; 2026) **DOI: https://doi.org/10.47391/JPMA.20344**

Introduction

The neck, a multifaceted anatomical region housing vital structures, plays a pivotal role as a prime site for expressing various systemic diseases. Lymph node enlargement within the neck is prevalent, stemming from congenital factors or underlying systemic conditions. These enlargements encompass a spectrum of aetiologies, including inflammatory, infective, reactive, traumatic and neoplastic categories, with manifestations varying based on age.[1] Surgeons typically lean towards suspecting infective and reactive causes in younger patients, while malignancy becomes a more prevalent concern in the older demographic.[2]

Neoplastic lymph nodes in the neck often derive from lymphomas, characterised by the abnormal proliferation of mature lymphocytes and classified into Hodgkin and Non-Hodgkin types.[3] Additionally, metastatic diseases contribute to neoplastic lymphadenopathies. Infective and reactive lymphadenopathies span a spectrum of viral, bacterial, parasitic and fungal infections.[4] Malignant lymphomas represent a small, but significant portion, constituting 2-3% of head and neck malignancies. Neck swellings can also arise from soft tissue and bone pathologies.[5]

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Lymphomas are the second most prevalent malignancy affecting the head and neck region, trailing only behind squamous cell carcinoma (SCC).[6] Extranodal presentations constitute around 15% of all lymphomas, with one-third localised to the head and neck region. The palatine tonsil emerges as the most common site among extranodal lymphomas in this area. Primary tonsillar lymphomas present with localised disease at onset, showcasing a predominance of the B-cell immunophenotype and carrying a favourable prognosis despite a heightened frequency of aggressive histology, notably diffuse large B-cell lymphoma (DLBCL).[7] Existing literature primarily categorises tonsillar lymphomas and their role as part of head and neck extranodal lymphomas, particularly in Waldeyer's ring lymphomas, using the Working Formulation classification.[8-10] Consequently, there exists a dearth of literature addressing the new World Health Organisation (WHO) classification of tonsillar lymphoma and the prognostic impact of cell immunophenotype in the affected patients.[11,12]

The current study was planned to determine the frequency of lymphoma in patients presenting with neck swellings, with a specific focus on both nodal and extranodal manifestations.

Patients and Methods

The prospective, cross-sectional study was conducted at the Outpatient Department (OPD) in the Ear-Nost-Throat (ENT) Unit of Khyber Teaching Hospital (KTH), Peshawar, Pakistan, from July to October 2022. After approval from

the ethics review board of Khyber Medical College, Peshawar, the sample size was calculated using the formula:[13]

$$n = \frac{Z^2 \times p \times (1-p)}{d^2}$$

The sample size was determined based on incidence rate 10%[14] and margin of error 0.05. The calculated sample size was inflated by 15%. Patients of either gender aged 4-75 years presenting with extra-thyroidal neck swellings were enrolled using non-probability consecutive sampling. Patients with biopsy-confirmed other cancers and those with obvious thyroid swellings were excluded. Written informed consent was obtained from all the participants.

Lymphoma diagnosis was primarily confirmed through histopathological examination of excised lymph node tissues. In instances where excisional biopsy was temporarily not feasible, fine-needle aspiration cytology (FNAC) was utilised as an initial diagnostic approach. However, these cases were subsequently re-evaluated and confirmed with histopathology whenever possible. Additionally, contrast-enhanced computed tomography (CT) scans of the head and neck region were employed to assess the extent of nodal involvement and aid in staging, but were not relied upon as standalone diagnostic tools.

Thorough history-taking and relevant clinical examinations were used for individuals with extra-thyroidal neck swelling. Data, including history, clinical examination details, contrast-enhanced CT scans of the head and neck, and FNAC results, were recorded on a standardised proforma.

Data was analysed using SPSS 24. Data was reported as frequencies and percentages. Chi-square test was used to assess the association between categorical variables and the presence of lymphoma. P<0.05 was considered significant.

Results

Of the 160 patients, 100(62.5%) were males and 60(37.5%) were females. There were 60(37.5%) patients aged 21-40 years, followed by 40(25%) aged 41-60 years, 30(18.7%) aged 4-20 years and 30(18.7%) aged 60 years and above. Lymphoma was observed in 40(25%) patients.

Gender (Table 1) and age (Table 2) were not significantly associated with lymphoma presence (*p*=0.908 and 0.639, respectively).

Table-1: Gender-wise distribution of lymphoma in patients with extrathyroidal neck swelling.

Variable	Lymphoma Present n (%)	Lymphoma Absent n (%)	Total n (%)	p-value
Gender				
Male	25 (62.5)	75 (62.5)	100 (62.5)	0.908
Female	15 (37.5)	45 (37.5)	60 (37.5)	

Table-2: Age-wise distribution of lymphoma in patients with extrathyroidal neck swelling.

Variable	Lymphoma Present n (%)	Lymphoma Absent n (%)	Total n (%)	*p*-value
Age Group (years)				
4–20	10 (25.0)	20 (16.7)	30 (18.8)	0.639
21–40	15 (37.5)	45 (37.5)	60 (37.5)	
41–60	8 (20.0)	32 (26.7)	40 (25.0)	
≥61	7 (17.5)	23 (19.2)	30 (18.8)	

Discussion

The current study provided important insights into the demographic trends of the disease, having detected lymphoma in 40(25%) patients with extra-thyroidal neck swellings. With males accounting for 62.5% of the detected cases, there was a male predominance, supporting earlier findings.[3,15] However, one study in 2016[16] reported male-to-female ratio in North America and Europe to be 1.2 and 1.1, respectively. Non-Hodgkin lymphoma (NHL) incidence rates are highest in developed regions, like Australia, North America and Europe, while mortality rates are disproportionately higher in low- and middle-income countries (LMICs).[17] Burkitt lymphoma (BL) shows high incidence in Uganda, Switzerland and Estonia, with rates twice as high in males as in females.[18] Regional and cultural factors seem to have an impact on variances in gender ratios.

Furthermore, the age-wise distribution indicated the highest prevalence in the 21-40 years (37.5%) and the 4-20 years (25.0%) groups. This trend aligned with the commonly observed pattern of lymphomas being more prevalent in the younger population, a phenomenon reported in various regions, including Pakistan.[19] In Zambia, lymphomas affect a relatively young demographic, with B-cell neoplasms being more common than T-cell types.[20] Classic Hodgkin lymphoma (CHL) exhibits a bimodal age-incidence profile, affecting younger individuals as often as the elderly.[21] Our results are in line with a similar distribution observed earlier,[13,22] but contradictory findings have also been reported.[3,23]

The disparity in the results could have been caused by the smaller sample size in the current study, which emphasises the need for larger and more diverse cohorts to draw more trustworthy conclusions. These demographic trends are clinically significant as they suggest that younger males in

particular may represent a group with a higher risk, warranting prioritised diagnostic workup and awareness initiatives. Moreover, understanding regional disparities in gender and age distribution can inform tailored public health strategies and help allocate diagnostic resources more efficiently. Such insights are especially vital in resource-limited settings where timely diagnosis of lymphoma remains a challenge.

The current study has several limitations, like selection bias in a single-centre setting may have affected the generalisability of the findings. Besides, there might be seasonal differences in the prevalence of lymphoma or other neck swellings that were not considered at any stage of the short-duration study. Finally, in patients with neck swellings, the study did not fully investigate specific clinical presentations, treatment approaches, or outcomes related to lymphoma.

Comparative, analytical, longitudinal studies are needed that may also cover socioeconomic factors to validate the current findings.

Conclusion

There was a progressive increase in lymphoma cases among patients with extra-thyroidal neck swelling, with an incidence of 25%. Lymphoma was more common in males, particularly in the middle-aged population. An immediate biopsy of every suspicious neck swelling is recommended to diagnose the disease in its early stages.

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References

1. Karthikeyan CR, Venkateswaran SR, Elangovan M. Clinical evaluation of nonthyroidal neck swellings. IAIM. 2019;6:57-61.
2. Chaturvedi HT, Patel B, Chaturvedi C, Damor PK, Patel V, Vasava R. Distribution of non-thyroid neck swellings and their clinico-pathological correlation. J Fam Med Prim Care. 2024;13:3355-61.
3. Fomete B, Agbara R, Samaila MO, Waziri DG, Osunde DO. The pattern of presentation of head and neck swellings in a tertiary health centre. Arch Intern Surg 2019;9:29. doi:10.4103/ais.ais_31_19
4. Butt RA, Rathore Z, Sarwar A, Azam F, Khan FW, Nisar M. Disease spectrum of cervical lymphadenopathy in adults. Pak J Med Health Sci. 2021;15:2853-5. doi:10.53350/pjmhs2115112853
5. Samaila MO, Oluwole OP. Extrapulmonary tuberculosis: fine needle aspiration cytology diagnosis. Niger J Clin Pract. 2011;14:297-9. doi:10.4103/1119-3077.86771
6. Epstein JB, Epstein JD, Le ND, Gorsky M. Characteristics of oral and paraoral malignant lymphoma: a population-based review of 361 cases. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2001;92:519-25. doi:10.1067/moe.2001.116062
7. Schuster SJ, Bishop MR, Tam CS, Waller EK, Borchmann P, McGuirk JP, et al. Tisagenlecleucel in adult relapsed or refractory diffuse large B-cell lymphoma. N Engl J Med. 2019;380:45-56. doi:10.1056/NEJMoa1804980
8. Jamil A, Mukkamalla SKR. Lymphoma. [Online] [Cited 2024 January 18]. Available from: URL:https://www.ncbi.nlm.nih.gov/books/NBK560826/
9. Florindez JA, Lossos IS, Alderuccio JP. Diffuse large B-cell lymphoma of the Waldeyer's ring: a US population-based survival analysis. Hematol Oncol. 2023;41:192-5. doi:10.1002/hon.3059
10. Yong W, Zhang Y, Zheng W, Wei Y. Prognostic factors and therapeutic efficacy of combined radio-chemotherapy in Waldeyer's ring non-Hodgkin lymphoma. Chin Med J (Engl). 2000;113:148-50.
11. Laskar S, Bahl G, Muckaden MA, Nair R, Gupta S, Bakshi A, et al. Primary diffuse large B-cell lymphoma of the tonsil: is a higher radiotherapy dose required? Cancer. 2007;110:816-23.doi:10.1002/cncr.22841
12. Kurz KS, Ott M, Kalmbach S, Steinlein S, Kalla C, Horn H, et al. Large B-cell lymphomas in the 5th edition of the WHO classification of haematolymphoid neoplasms—updated classification and new concepts. Cancers. (Basel) 2023;15:2285. doi:10.3390/cancers15082285
13. Lwanga SK, Lemeshow S. Sample size determination in health studies. Geneva: World Health Organization; 1991.
14. Ali MI, Huq MM, Haque M, Tarafder KH. Comparative study of neck swelling by clinical, cytological and histopathological examination. Bangladesh J Otorhinolaryngol. 2020;26:24-30. doi:10.3329/bjo.v26i1.47949
15. Bhardwaj A, Kusum A, Kishore S. Comparative analysis of the distribution of various subtypes of lymphoid malignancies in Uttarakhand with other regions in India. ISMEAR 2012:32-4.
16. Nair R, Arora N, Mallath MK. Epidemiology of non-Hodgkin's lymphoma in India. Oncology. 2016;91:18-25. doi:10.1159/00044 7577
17. Mafra A, Laversanne M, Gospodarowicz M, Klinger P, De Paula Silva N, Piñeros M, et al. Global patterns of non-Hodgkin lymphoma in 2020. Int J Cancer. 2022;151:1474-81. doi:10.1002/ijc.34141
18. Mbulaiteye SM, Devesa SS. Burkitt lymphoma incidence in five continents. Hemato. 2022;3:434-53. doi:10.3390/hemato3030030
19. Saleem U, Naveed MA, Batool M, Nadeem K, Muhammad Sami ullah, Safdar S. Incidence and clinicohematological profile of lymphomas in Southern Punjab Pakistan. Int J Endorsing Health Sci Res. 2020;8:13-20. doi:10.29052/IJEHSR.v8.i1.2020.13-20
20. Polepole P, Mudenda VC, Munsaka SM, Zhang L. Spectrum of common Hodgkin lymphoma and non-Hodgkin lymphomas subtypes in Zambia: a 3-year records review. J Health Popul Nutr. 2021;40:1-9. doi:10.1186/s41043-021-00254-4
21. Gupta S, Craig JW. Classic Hodgkin lymphoma in young people. Semin Diagn Pathol.2023;40:379-91.doi:10.1053/j.semdp.2023. 09.003
22. Storck K, Brandstetter M, Keller U, Knopf A. Clinical presentation and characteristics of lymphoma in the head and neck region. Head Face Med. 2019;15:1.doi:10.1186/s13005-018-0186-0
23. Devi AA, Sharma TD, Singh YI, Sonia H. Clinicopathological profile of patients with non-Hodgkin's lymphoma at a regional cancer center in Northeast India. J Sci Soc. 2017;44:140-4. doi:10.4103/jss.JSS_42_17.

Author Contribution:

IUD: Concept, design, data acquisition, analysis, interpretation and agreement to be accountable for all aspects of the work.
AA: Concept, design, data acquisition, analysis, interpretation, drafting and agreement to be accountable for all aspects of the work.
AAK: Concept, design, data acquisition, analysis, interpretation and final approval.