ABSTRACT

OBJECTIVE
To determine the proportion of cervical lymphadenopathy in systemic diseases, their presentation and investigative tools.

METHODOLOGY
This descriptive study was carried out from 1st July 2014 to 30 June 2017 in ENT and head and neck department Naseer Teaching Hospital and Town Teaching Hospital, Peshawar. Total of 270 patients with enlarged cervical lymph nodes, of either sex and of any age were approached for inclusion into the study. Patients with suspected acute inflammation were given a trial of antibiotic and followed for two weeks were excluded from the study. Excisional biopsy of the lymph nodes was performed in all these patients with six weeks or more duration.

RESULTS
In our study out of 270 patients, 158 (58.5%) were males and the majority of patients (63.3%) had ages from 11-40 years. Tuberculous cervical lymphadenopathy was diagnosed in 145 (53.7%) patients, reactive hyperplasia in 53 (19.6%), lymphoma in 32 (11.8 %), metastasis to cervical lymph nodes in 30 (11.1%), sarcoidosis in 7 (2.6%) and other very rare conditions as Kawasaki, Kikuchie and Rosi Dorfman were found in only one of each (0.4%). About 136 (50.4%) of the patients had involvement of multiple lymph nodes while 134 (49.6%) had single swelling. The matted lymph nodes were found in 162 (60%) whereas discrete lymph nodes were found in only 108 (40%) cases. Cold abscess was found in 19 (7%) of patients.

CONCLUSION
Tuberculosis is the commonest cause of cervical lymphadenopathy, with the majority of these patients having multiple lymph node involvement. In children, usually cervical lymphadenopathy is reactive or infective while in older age mostly metastatic.

KEY WORDS: Cervical lymphadenopathy, Excisional biopsy of lymph nodes

INTRODUCTION
The term lymphadenopathy refers to the enlargement of the lymph nodes, either due to the disease of lymph nodes or secondary to the systemic diseases. The size of cervical lymph node less than 1cm in diameter is generally considered to be normal. Different causes of cervical lymphadenopathy include infections, inflammatory diseases, degenerative diseases and neoplasms. Infectious/inflammatory causes of cervical lymphadenopathy are mainly tuberculosis, cat-scratch disease, syphilis, leprosy, actinomycosis, rhinoscleroma, and fungal infections. Granulomatosis with polyangitis, Churg-Strauss syndrome, Behçet disease, chronic granulomatous disease (tuberculosis), and sarcoidosis. Kimura's disease is one of the rare chronic inflammatory disorder characterized by the head and neck lymphadenopathy. Toxoplasmosis is a parasite infectious disease caused by the intracellular Toxoplasma gondii.

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https://doi.org/10.37762/jgmds.4-2.21
infective while in older age mostly metastatic cervical lymphadenopathy noted. Physical findings of enlarge lymph nodes like tenderness and fluctuations are important clues of infective diseases while hard and fixed lymph nodes indicate malignant process. In lymphoma, usually there are multiple enlarged nodes which feel rubbery to palpation. Constitutional symptoms such as fever, weight loss, fatigue or night sweats could suggest disorders such as tuberculosis, lymphoma, collagen vascular diseases, unrecognized infection or malignancy. The presence of fever is commonly associated with infections. Cold abscess is a clinical feature of tuberculosis. The list of important investigative tools used to reach to the conclusion of cervical lymphadenopathy are ultrasound, FNAC, CT scan/MRI and excisional biopsy. Ultra sound is an excellent first line investigating tool for enlarged lymph nodes, using Grey ultrasound scale and avoids invasive procedures. Fine needle aspiration cytology is minimal invasive procedure usually used to diagnose the cervical lymphadenopathy. To confirm the histopathological diagnosis, an excision biopsy is performed on the palpable and largest and easily excizable lymph nodes. Computed tomography (CT) of the neck, chest, abdomen and pelvis is the most appropriate initial investigation following FNAC diagnosis of metastatic adenocarcinoma in cervical lymph nodes with unknown primary.

METHODOLOGY
This descriptive study was undertaken from 1st July 2014 to 30 June 2017 in ENT and head and neck department Naseer Teaching Hospital and Town Teaching Hospital, Peshawar. Total of 270 patients with enlarged cervical lymph nodes, of either sex and of any age were approached for inclusion into the study. Patients with suspected acute inflammation were given a trial of antibiotic and followed for two weeks were excluded from the study. Excisional biopsy of the lymph nodes was performed in all these patients with six weeks or more duration. Written informed consent for recruitment into the study was obtained from all patients. Detailed history and physical examination were performed as part of routine clinical care. Lymph nodes were examined for site, size, number, whether matted or discrete, presence of tenderness, consistency, and their relation to underlying structures. Relevant investigations were carried out in all cases including screening for Hepatitis B and Hepatitis C infection, complete blood picture, erythrocyte sedimentation rate (ESR) and chest x-ray. Excision biopsy was performed. Statistical analysis was done using SPSS version 12.

RESULTS
Out of 270 patients, 186 (68.9%) were males and the majority of patients had ages from 12-40 years. Tuberculous cervical lymphadenopathy was diagnosed in 141 (74.5%) patients, reactive hyperplasia in 30 (11.1%), metastasis to cervical lymph nodes in 18 (6.7%), lymphoma in 12 (4.4%) and Kikuchie’s lymphadenitis in 9 (3.3 %) cases. About 146 (80%) of the patients had involvement of multiple lymph nodes while 36 (20%) had single swelling. 189 (70%) of the patients had matted lymph nodes whereas discrete lymph nodes were found in only 36 (20%) cases. A single lymph node group was involved in 54 (60%) patients and more than 2 lymph node groups were involved in 11 (12.2%) patients. In 61 (67.8%) cases, there were matted lymph nodes, whereas 16 (17.8%) of the patients were having discrete lymph nodes. The posterior triangle (level V) was the most common site of lymphadenopathy in 45 (50%) patients, followed by upper deep cervical (level II) in 28 (31.1%) and submandibular region (level I) in 8 (8.9%) patients. Cold abscesses were present in 7% as shown in table 2. Tuberculous cervical lymphadenopathy was the most common histological diagnosis in 141/270 (52.2%) patients followed by reactive hyperplasia in 50/270 (18.5%), lymphoma 33/270 (12.2%), metastatic 29/270 (10.7%), other rare diseases like Kawasaki disease, Rosi Dorfman and Kikuchie’s were found in 1/270 (0.4%) each as shown in table 3.
Table 1: Demographic presentation

| Characteristics                  | Number of patients | Percentage |
|----------------------------------|--------------------|------------|
| Male                             | 158/270            | 58.5%      |
| Female                           | 112/270            | 41.5%      |
| Less than 10 years               | 47/270             | 17.4%      |
| 11-40 years                      | 171/270            | 63.3%      |
| More than 40 years               | 52/270             | 19.3%      |
| Single lymph node group          | 134/270            | 50.4%      |
| Multiple lymph node groups       | 136/270            | 49.6%      |
| Matted lymph nodes               | 162/270            | 60%        |
| Discrete lymph nodes             | 108/270            | 40%        |

Table 2: Involvement of lymph node groups and abscess

| Node groups/abscess             | Number of patients | Percentage |
|---------------------------------|--------------------|------------|
| Posterior triangle nodes        | 131/270            | 48.5%      |
| Upper deep cervical nodes       | 97/270             | 35.9%      |
| Submandibular nodes             | 25/270             | 9.3%       |
| Pretracheal                     | 17/270             | 6.3%       |
| Cold abscess                    | 19/270             | 7%         |

Table 3: Etiology of cervical lymphadenopathy

| Causes                         | Number of patients | Percentage |
|--------------------------------|--------------------|------------|
| Tuberculosis                   | 145/270            | 53.7%      |
| Reactive                       | 53/270             | 19.6%      |
| Lymphoma                       | 32/270             | 11.8%      |
| Metastatic                     | 30/270             | 11.1%      |
| Sarcoidosis                    | 7/270              | 2.6%       |
| Kickuchie's disease            | 1/270              | 0.4%       |
| Rosi dorfman                   | 1/270              | 0.4%       |
| Kawasaki disease               | 1/270              | 0.4%       |

Figure 1: Levels of cervical lymph nodes
CAUSES AND PRESENTATION OF CERVICAL LYMPHADENOPATHY

| Grey Ultra Sound Scale |
|------------------------|
| **Size**               | The larger nodes tend to have a higher incidence of malignancy (reactive nodes can be as large as metastatic nodes). |
| **Shape**              | Metastatic nodes tend to be round with a short to long axes ratio greater than 0.5, while reactive or benign lymph nodes are elliptical in shape. |
| **Borders**            | Metastatic lymph nodes tend to have sharp borders whilst benign lymph nodes usually show un-sharp borders (metastatic nodes with extra cellular spread may demonstrate ill-defined borders). |
| **Echogenecity**       | Metastatic lymph nodes are predominantly hypoechoic relative to the adjacent musculature, (metastatic nodes from papillary carcinoma of the thyroid are usually hyperechoic). |
| **Necrosis**           | Intranodal necrosis may be found in metastatic and tuberculosis nodes. |
| **Calcification**      | Metastatic cervical nodes from papillary carcinoma of the thyroid tend to show calcification. |

**DISCUSSION**

Cervical lymphadenopathy is a manifestation of a spectrum of diseases ranging from infective process to malignant diseases, thereby invasive diagnostics procedure are required to reach to the proper diagnosis. In most of the studies, the most common diagnosis in adults was malignancy while in children infections and benign masses were common. Although infectious causes of lymphadenopathy are more prevalent in the pediatric population compared with adults, neoplasms should also be considered. Imaging studies, like ultrasound, can provide valuable information for accurate diagnosis. Fine needle aspiration cytology (FNAC) of lymph nodes is a simple and cost effective, out-patient procedure used for diagnosis of various causes of lymphadenopathy, without serious complications. Overall fine needle aspiration cytology accurately predicted the histological findings (89%) with a sensitivity of 93.1%, specificity of 100%. In our study tuberculous cervical lymphadenopathy was the most common histological diagnosis in 141/270 (52.2%) patients followed by reactive hyperplasia in 50/270 (18.5%), lymphoma 33/270 (12.2%), metastatic 29/270 (10.7%), Kawasaki disease in Uganda the major causes of cervical lymphadenopathy were: tuberculosis (69.4%), Kaposi's sarcoma-KS (10.2%) and reactive adenitis (7.4%). Our study also found very similar findings to a study conducted in Kathmandu. Lymphadenopathy in HIV/AIDS patients may reflect a serious condition, most likely tuberculosis and lymphoma. Since patients might underestimate lymphadenopathy, physicians would rather list these entities for diagnosis. In a study at University Medical Center Homburg/Saar, the distribution of the most common pathological conditions was as follows: Non-specific reactive hyperplasia (35.5 %), metastases (34.3 %), lymphoma (16.3 %), granulomatous lesions (6 %), abscess formations (2 %), necrotic lymphadenitis and Castleman's disease one case of each. In a study in Kolkata, tuberculous lymphadenitis was the most common finding (46.7%), while reactive hyperplasia (45%) in patients less than 20 years of age. Malignant pathology accounted for 13.7% of cervical lymph node enlargement, most of which was due to metastatic squamous cell carcinoma (67.7%).

**CONCLUSION**

- In children, usually cervical lymphadenopathy is reactive or infective while in older age mostly metastatic.
- Tuberculosis is still the commonest cause of cervical lymph node enlargement in our setting in Pakistan, usually involving multiple lymph nodes.
- Lymph node excision biopsy is a well-established diagnostic procedure practiced worldwide.
REFERENCES

1. Kerawala C, Newlands C (editors) (2010). Oral and maxillofacial surgery. Oxford: Oxford University Press. pp. 68,377,392–394.

2. Nwawka OK, Nadgir R, Fujita A, Sakai O. Granulomatous disease in the head and neck: developing a differential diagnosis. Radiographics. 2014 Sep-Oct;34(5):1240-56.

3. Kaparos N1, Favrat B, D’Acremont V. [Fever and lymphadenopathy: acute toxoplasmosis in an immunocompetent patient]. Rev Med Suisse. 2014 Nov 26;10(452):2264, 2266-8, 2270.

4. Terézhalmý GT, Huber MA, Jones AC; Noujeim M; Sankar V (2009). Physical evaluation in dental practice. Ames, Iowa: Wiley-Blackwell. pp. 120–123,160,172.

5. Kalantzis A, Scully C (2005). Oxford handbook of dental patient care, the essential guide to hospital dentistry. (2nd ed.). New York: Oxford University Press. pp. 47,343.

6. Odell EW (Editor) (2010). Clinical problem solving in dentistry (3rd ed.). Edinburgh: Churchill Livingstone. pp. 91–94.

7. Ahuja A, Ying M. Grey-scale sonography in assessment of cervical lymphadenopathy: review of sonographic appearances and features that may help a beginner. Br J Oral Maxillofac Surg. 2000;38:451.

8. Pindiga UH, Dogo D, Yawe T. Histopathology of primary peripheral lymphadenopathy in North Eastern Nigeria. Nig J Surg Res 1999;1:68-71.

9. Pepper C1, Pai I, Hay A, Deery A, Wilson P, Williamson P, Pitkin L. Investigation strategy in the management of metastatic adenocarcinoma of unknown primary presenting as cervical lymphadenopathy. Acta Otolaryngol. 2014 Aug;134(8):838-42.

10. Zeshan QM, Mehrukh M, Shahid P. Audit of lymph node biopsies in suspected cases of lymphoproliferative malignancies, implications on the tissue diagnosis and patient management. J Pak Med Assoc 2000;50:179-82.

11. Mabedi C, Kendig C, Liomba G, Shores C, Chimzimu F, Kampani C, Krysiak R, Gopal S. Causes of cervical lymphadenopathy at Kamuzu Central Hospital. Malawi Med J. 2014 Mar;26(1):16-9.

12. Chand P, Dogra R, Chauhan N, Gupta R, Khare P. Cytopathological Pattern of Tubercular Lymphadenopathy on FNAC: Analysis of 550 Consecutive Cases. J Clin Diagn Res. 2014 Sep;8(9):FC16-9.

13. Malik GA, Rehan TM, Bhatti SZ, Riaz JM, Hameed S. Relative frequency of different diseases in patients with lymphadenopathy. Pak J Surg 2003;19;86-9.

14. Maharjan M, Hirachan S, Kafle PK, Bista M, Shrestha S, Toran KC, et al. Incidence of tuberculous in enlarged neck nodes, our experience. Kathmandu Univ Med J 2009;7:54-8.

15. Muyanja D, Kalyesubula R, Namukwaya E, Othieno E, Mayanja-Kizza H. Diagnostic accuracy of fine needle aspiration cytology in providing a diagnosis of cervical lymphadenopathy among HIV-infected patients. Afr Health Sci. 2015 Mar;15(1):107-16.

16. Hadadi A, Saffarian S, Jaberi ZH, Hamidian R. Frequency and etiology of lymphadenopathy in Iranian HIV/AIDS patients. Asian Pac J Trop Biomed. 2014 May;4(Suppl 1):S171-6.

17. Mitra S, Ray S, Mitra PK. Analysis of FNAC of cervical lymph nodes: experience over a three-year period. J Indian Med Assoc. 2013 Sep;111(9):599-602.

18. Umer MF, Mehdi SH, Muttaqi A, Hussain SA. Presentation and aetiological aspects of cervical lymphadenopathy at Jinnah Medical College Hospital Korangi Karachi. Pak J Surg 2009;25:224-6.