# **Original Research Article**

DOI: http://dx.doi.org/10.18203/2349-2902.isj20174499

# **Proportion of malignancy in cervical lymphadenopathy**

# Sandeep Kumar David, Bonny A. Joseph\*, Easwarapillai B. K., R. R. Varma

Department of General Surgery, DRSMCSI Medical College, Karakonam, Kerala, India

Received: 20 July 2017 Accepted: 18 August 2017

\*Correspondence: Dr. Bonny A. Joseph,

E-mail: bonnyaloysius@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

#### **ABSTRACT**

Background: Cervical lymphadenopathy is a commonly encountered presenting complaint in out-patient departments. There are many reasons for cervical lymphadenopathy in a range spanning from benign through infective to malignant pathology. This study aims to find out the proportion of malignancy in such patients.

Methods: 100 patients with cervical lymphadenopathy who fulfilled the criteria were included in the study from January 2015 to June 2016. Each patient underwent clinical examination and investigations including ESR, total count, fine needle aspiration cytology and biopsy.

**Results:** Out of the 100 cases examined, 19 (19%) had malignancy. Among them, 6 (6%) had primary malignancy and 13 (13%) had secondary malignancy. 25 (25%) had tuberculous lymphadenopathy and 46 (46%) had reactive hyperplasia.

Conclusions: There is significant incidence of malignancy in patients with cervical lymphadenopathy. The most common was metastatic lymph node from a primary malignancy. It is important to keep this in mind while evaluating a case of cervical lymphadenopathy.

**Keywords:** Lymphadenopathy, Lymphoma, Lymph nodes, Neck, Neoplasms

# INTRODUCTION

Lymphadenopathy, which is defined as an abnormality in the size or character of lymph nodes, is caused by the invasion or propagation of either inflammatory cells or neoplastic cells into the node. The most common cause of cervical lymphadenopathy is infection, which in children is typically an acute and self-limited viral infection. While most cases resolve quickly, some Entities such as atypical mycobacteria, cat-scratch disease, toxoplasmosis, Kikuchi's lymphadenitis, sarcoidosis, and Kawasaki's syndrome create persistent can lymphadenopathy for many months, and may be confused with neoplasms.

Malignancies in lymph nodes in our country are predominantly metastatic in nature with an incidence varying from 65.7% to 80.4% and lymphomas range from 2% to 15.3% among lymph nodes aspirated from all sites.1-3

The lymphatic system was described in the seventeenth century independently by Olaus Rudbeck and Thomas Bartholin. The cervical lymph nodes are generally classified into seven groups based on their anatomical location and drainage. Initially described by Memorial Sloan Kettering and endorsed by American Academy of Otolaryngology and the American Joint Committee on Cancer, this classification system was used generally for the purpose of staging of head and neck squamous cell carcinoma.<sup>3</sup> Since it is well known and easy to remember, it has been used in benign diseases also. Since superficial nodes are involved very late in malignancy, this classification system does not involve all the superficial nodes in the cervical region. The classification system is as follows

- Level I sub mental and submandibular
- Level II upper jugular group
- Level III middle jugular group

- Level IV lower jugular group
- Level V posterior triangle group
- Level VI anterior compartment group.<sup>3-5</sup>

There are sublevels to these classification systems.<sup>4</sup> They are:

- Sublevel IA sub-mental nodes
- Sublevel IB sub-mandibular nodes
- Sublevel IIA upper jugular and jugulo digastric nodes anterior to spinal accessory nerve
- Sublevel IIB upper jugular and jugulo digastric nodes posterior to spinal accessory nerve
- Sublevel VA spinal accessory nodes
- Sublevel VB transverse cervical and supraclavicular nodes.

#### Structure of lymph node

Lymph node is an organized collection of lymphoid tissue, through which the lymph passes on its way back into systemic circulation. They are bean shaped or oval shaped and vary from a few millimeters to 1-2 cm in size. They are located at intervals along the lymphatic system. Vessels which bring in lymph to the node is afferent vessel and there will be several afferent vessels. The lymph after reaching the node, percolates through the substance of the node and drains out through the efferent vessel, which is single in number.

The lymph node contains an outer cortex and an inner medulla. The cortex consists of lymphoid follicles and it surrounds the medulla all around except at the hilum. The hilum is a depression on the lymph node surface where the artery supplying the node enters and veins and the efferent lymph vessel leaves the node. Hilum is the reason for it being bean shaped.

# Etiopathology of cervical lymphadenopathy

The different reasons for cervical lymphadenopathy can be categorized into infection, neoplastic and miscellaneous.<sup>7-9</sup>

The Neoplastic causes are primary malignancy, secondary malignancy and benign tumors. Primary malignancies like leukemia and lymphoma. Secondary malignancies are generally squamous cell carcinoma from upper aero digestive tract, adenocarcinoma from gastro intestinal tract, thyroid, breast, kidney and testis, malignant melanoma or sarcomas. Lymphoma is a common malignant disease and head and neck involvement is relatively common.<sup>10</sup> Clinically, lymphomatous cervical lymph nodes are difficult to differentiate from other causes of lymphadenopathy including metastatic nodes. As the treatment options differ, accurate identification of the nature of the diseases is essential. Metastatic cervical nodes from head and neck primaries are site-specific. 11,12 Common nodal metastatic

sites for head and neck primaries are pharynx, larynx and esophagus.<sup>13</sup> Papillary carcinoma of thyroid metastasize along internal jugular chain.

Tumors in the oral cavity metastasize to the submandibular and upper cervical regions, although carcinoma of the tongue may give rise to skip metastases in the lower neck. Infraclavicular primaries from breast and lung metastasize to supraclavicular fossa and posterior triangle. Nasopharyngeal carcinoma commonly spreads to upper cervical and posterior triangle nodes.

#### **METHODS**

An institutional based cross-sectional study involving 100 patients was conducted in the Department of General Surgery, DRSMCSI Medical College, Karakonam, Trivandrum, India from January 2015 to June 2016 with a study duration of 18 months. It was a prospective study. Data about the patients age, sex, symptoms, coexistence of diabetes, were collected using pre-tested and predesigned pro-forma with informed consent from the patient. Clinical examination was done to assess the level of lymph node involved. Final diagnosis was obtained by the means of fine needle aspiration cytology or histopathological examination of the excised lymph node. Institutional ethical committee clearance was obtained before commencement of the study. Written informed consent from all study participants were obtained. Privacy and confidentiality was maintained during all stages of the study.

## Study subjects

The consecutive patients in the age group of 18 years and above, attending the General Surgery OPD with neck swelling was screened for lymphadenopathy. He/she was informed about the study in detail. Written informed consent (including procedures like FNAC and biopsy) was obtained from enrolled participants.

#### Inclusion criteria

All patients who presented in surgery OPD in age group of 18 years and above with lymph node swelling in the cervical region for more than two weeks.

#### Exclusion criteria

- Neck swellings other than lymph nodes
- Acutely ill patients.

#### Data collection technique

The consecutive patients with neck swelling attending in the General Surgery OPD of DRSMCSI Medical College. Socio demographic details were obtained from the patient. Data was collected using a proforma. Patients were classified based on age and sex. Clinical assessment was done. Enlarged lymph nodes were assessed by Fine Needle Aspiration cytology and further excision biopsy was done in cases where FNAC was inconclusive.

#### Data analysis

Data was analysed using statistical analysis. All qualitative variables are expressed as proportions and quantitative variables as mean and standard deviation. Chi square test is the statistical test of significance, odds ratio was calculated for the strength of association.

#### **RESULTS**

This was a cross sectional study, we recruited 100 patients with cervical lymphadenopathy according to the inclusion and exclusion criterions. They were evaluated in detail with clinical examination and investigations. Of the total study population, there were 54% females and 46% males.

Table 1: Comparison of gender distribution of patients studied.

Gender	Malignant lymphadenopathy	Other causes
Male	13	33
Female	6	48
Total	19	81

Among the 46 males, 13 had malignancy and among the 54 females 6 had malignancy.

55% of participants were in the age group of 18 to 40 years. 29% were in 41 to 60 years and 16% belonged to more than 60 years of age group. Mean age of the participants was 41.52 years.

**Table 2: Comparison of age distribution of patients studied.** 

Age in years	Malignant lymphadenopathy	Other causes
18-40	4	51
41-60	7	22
>60	8	8
Total	19	81

Malignant lymphadenopathy was more in the above 60 years age group.

Level 2 lymph node group was the most affected in presentation (26%), followed by level 3 (21%). Only 7% presented with level 4 lymphadenopathy. 7% had multiple level involvement. Out of the total participants, 46% had reactive lymphadenitis and 25% had tuberculous lymphadenitis. 19% had malignant lymphadenopathy. Most of the malignant lymphadenopathy was due to secondary deposits (13%, n=100) and lymphoma accounted for 6% (n=100).

Hodgkin's and Non-Hodgkin's lymphoma had equal representation with 3% each (n=100). 11.1% of female participants had malignancy whereas 28.3% of males had malignancy. Malignancy was more common in age category of more than 60 years (42.1%, n=19), and was least common in 18 to 40 years (21%, n=19).

Table 3: Comparison of lymph node level affected in patients studied.

Lymph node level involved	Malignant lymphadenopathy	Other causes
Level I	2	18
Level II	4	22
Level III	5	16
Level IV	1	6
Level V	7	12
Multiple levels involved	0	7
Total	19	81

Level V was the most commonly affected among malignant lymphadenopathy.

Table 4: Malignancy in the patients studied.

Malignancy	No.	Percentage (N=19)
Non-Hodgkin's lymphoma	3	15.79%
Hodgkin's lymphoma	3	15.79%
Metastatic deposits	13	68.42%
Total	19	100%

Both Hodgkins and Non-Hodgkins lymphoma had equal representations while secondary deposits had the maximum occurrence.

# **DISCUSSION**

During the past 3 decades, the incidence of colorectal Cervical lymphadenopathy was a common presentation of malignancy of the head and neck region. We encountered 100 patients with cervical lymphadenopathy and in present study, there were 54% females and 46% males. Hafez et al, also had 53.5% females and 56.5% males.<sup>14</sup>

In the present study, the male to female ratio was 1:1.174. 11.1% of females had malignancy in lymph node, whereas 28.3% of males had malignancy. Most participants in the present study belonged to the age group of 18 to 40 years, with 55% of participants.

There were only 16% of participants in the age group of more than 60 years. 42.1% of participants in the age category of more than 60 years had malignancy, whereas only 21.1% of participants in age category of 18 to 20 years had malignancy.

In the present study, the most common presentation was with level 2 lymphadenopathy. There were 26% with level 2 lymphadenopathy. Least common was level 4 lymphadenopathy. There were 13% with level 5

lymphadenopathy. Highest incidence of malignancy was in the participants presenting with level 5 lymphadenopathy (36.8%). Next commonest was level 3 lymphadenopathy (23.8%) Level 1 lymphadenopathy had the least incidence of malignancy (10%).

Most of the participants had reactive lymph node in histopathology (46%). The next commonest was tuberculous lymph node (25%). 4% had chronic suppurative lymph node. There were 3% with kikuchi disease and 2% with toxoplasmosis. The least common was actinomycosis with only 1%. Other studies also revealed benign diseases were more frequent than malignant diseases. Hirachand S et al, showed that 77.6% had benign pathology. 15 But Ahmad SS et al, showed that 59.13% was malignant and 40.87% was benign. 16 But Steel et al found majority of cases were malignant (59%) and 34% of cases were benign. 17

In the present study, 19 of the participants had malignancy in histopathology. Majority of the malignant lymph node was due to metastatic lymph node in the present study (68.42%, n=19) and both Hodgkin's lymphoma and Non-Hodgkin's lymphoma was equal in incidence (15.79% each, n=19).

Hirachand S et al showed that 22.38% were having malignancy.<sup>15</sup> Majority of the malignant lymph node was due to metastatic disease (53.3%) and 33.33% had Non-Hodgkin's lymphoma and 13.33% had Hodgkin's lymphoma.

#### **CONCLUSION**

There is significant incidence of malignancy in patients with cervical lymphadenopathy. The most common was metastatic lymph node from a primary malignancy. It is important to keep this in mind while evaluating a case of cervical lymphadenopathy.

# ACKNOWLEDGMENTS

Authors would like to acknowledge DRSMCSI Medical College, Karakonam, Trivandrum, Kerala, India for the help and support in carrying out this study.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

institutional ethics committee

# REFERENCES

- Bagwan IN, Kane SV, Chinoy RF. Cytologic evaluation of the enlarged neck node: FNAC utility in metastatic neck disease. Int J Pathol. 2007;6:2.
- Alam K, Khan A, Siddiqui F, Jain A, Haider N, Maheshwari V. Fine needle aspiration cytology (FNAC):

- A handy tool for metastatic lymphadenopathy. Int J Pathol. 2010;10:2.
- Robbins KT, Medina JE, Wolfe GT, Levine PA, Sessions RB, Pruet CW. Standardizing neck dissection terminology. Official report of the Academy's Committee for Head and Neck Surgery and Oncology. Arch Otolaryngol Head Neck Surg. 1991;117:601-5.
- Robbins KT, Clayman G, Levine PA, Medina J, Sessions R, Shaha A, et al. Neck dissection classification update: revisions proposed by the American Head and Neck Society and the American Academy of Otolaryngology— Head and Neck Surgery. Arch Otolaryngol Head Neck Surg. 2002;128(7):751-8.
- Som PM, Curtin HD, Mancuso aa. An imaging-based classification for the cervical nodes designed as an adjunct to recent clinically based nodal classifications. Arch Otolaryngol Head Neck Surg. 1999;125(4):388-96.
- Warwick, Roger; Peter L. Williams (1973) (1858).
  "Angiology (Chapter 6)". Gray's anatomy. illustrated by Richard EM Moore (Thirty-fifth ed.). London: Longman; 1973:588-775.
- Kerawala C, Newlands C. (editors). Oral and maxillofacial surgery. Oxford: Oxford University Press;2010:68,377,392-394. ISBN 9780199204830.
- Kalantzis A, Scully C. Oxford handbook of dental patient care, the essential guide to hospital dentistry. (2nd ed). New York: Oxford University Press; 2005:47,343.
- Odell EW (Editor). Clinical problem solving in dentistry (3rd ed.). Edinburgh: Churchill Livingstone; 2010:91-94.
- DePena CA, Van Tassel P, Lee YY. Lymphoma of the head and neck. Radiol Clin North Am. 1990;28:723.
- 11. Som PM. Lymph nodes of the neck. Radiol. 1987;165:593.
- 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.
- Ishii JI, Amagasa T, Tachibana T, Shinozuka K, Shioda S. US and CT evaluation of cervical lymph node metastasis from oral cancer. J Cranio-Max-Fac Surg. 1991;19:123.
- Hafez NH, Tahoun NS. Reliability of fine needle aspiration cytology (FNAC) as a diagnostic tool in cases of cervical lymphadenopathy. J Egypt Natl Cancer Inst. 2011;23:105-14.
- Hirachand S, Lakhey M, Akhter J, Thapa B. Evaluation of fine needle aspiration cytology of lymph nodes in Kathmandu Medical College, Teaching hospital. Kathmandu Univ Med J. 2009;7(26):139-42.
- Ahmad SS, Akhtar S, Akhtar K, Naseen S, Mansoor T. Study of fine needle aspiration cytology in lymphadenopathy with special reference to acid fast staining in cases of tuberculosis. J K Sci. 2005;7(1):1-4.
- 17. Steel BL, Schwartz MR, Ibrahim R. Fine needle aspiration biopsy in the diagnosis of lymphadenopathy in 1103 patients. Acta Cytol. 1995;39:76.

Cite this article as: David SK, Joseph BA, Easwarapillai BK, Varma RR. Proportion of malignancy in cervical lymphadenopathy. Int Surg J 2017;4:3378-81.