

## Cytopathological spectrum of cervical lymphadenopathy in a tertiary care centre of Western Uttar Pradesh

Amaninder Singh<sup>1\*</sup>, Ranjan Agrawal<sup>2</sup>, Nitesh Mohan<sup>3</sup>, B. C Choudhary<sup>4</sup>

<sup>1</sup>Post Graduate Student, <sup>2-4</sup>Professor, Dept. of Pathology, Rohilkhand Medical College & Hospital, Bareilly, Uttar Pradesh, India

**\*Corresponding Author: Amaninder Singh**

Email: amaninder.avneet12345@gmail.com

Received: 9<sup>th</sup> February, 2019

Accepted: 26<sup>th</sup> February, 2019

### Abstract

**Introduction:** Cervical lymphadenopathy is common in India and may present as a diagnostic problem to the clinicians. Diseases affecting cervical lymph nodes are of varying severity starting from simple infection to malignant pathology.

**Objective:** The purpose of this study was to observe the various clinical presentations of cervical lymphadenopathy and correlate the cytological and histopathological findings to estimate its efficacy.

**Materials and Methods:** A prospective study of 290 cases of Fine needle aspiration cytology (FNAC) of cervical lymphadenopathy was conducted and studied. Histopathological correlation was done in all the cases that were biopsied. The study was carried out over a period of one year in the department of Pathology, Rohilkhand Medical College & Hospital, Bareilly in Western Uttar Pradesh. The clinical and pathological findings were studied and their importance in reaching towards a diagnosis was also evaluated.

**Result:** Out of 290 cases, the most common diagnosis was reactive lymphadenitis in 78 cases followed second in line by 74 cases of granulomatous lymphadenitis. The average median age of study population was 40 years. 56 study subjects presented with Reactive lymphadenitis and 36 cases of granulomatous lymphadenitis. 289 had the size of lymph node less than 3 cm. Reactive and tubercular lymphadenitis cases were observed more on the left side and malignant cases more on the right side.

**Conclusion:** The present study highlights the role of cytopathology in the early diagnosis and effective management of cervical lymphadenopathy.

**Keywords:** Cervical, Lymphadenopathy, FNAC, Biopsy, Tubercular.

### Introduction

Neck masses are a common clinical condition that mostly occur due to enlarged lymph nodes. Lymph nodes are present in the neck, thorax, axilla, abdomen, and inguinal area and act as filters for the lymph fluid as it circulates in the body. These nodes contain B and T cells along with antigen presenting dendritic cells. These dendritic cells are component of the immune system and help in fighting against disease and infections.<sup>1,2</sup> Lymphadenopathy refers swollen or enlarged lymph nodes. Cervical lymphadenopathy is usually defined as cervical nodal tissue measuring more than 1 cm diameter.

Lymphadenopathy can be classified on the lymph node basis of clinical as well as pathological parameters. Based on the duration, of disease lymphadenopathy is classified as acute (2 weeks duration), sub-acute lymphadenopathy (2-6 weeks duration) and chronic lymphadenopathy which includes any lymphadenopathy not resolving by 6 weeks.<sup>1,3</sup> Cervical lymphadenopathy is a common problem encountered in patients and is mostly attributable to infectious etiologies.

In India, a large number of patients with enlarged cervical, axillary or inguinal lymph nodes are seen in the outpatient clinic.<sup>1,3</sup> It is one of the commonest clinical finding and may indicate an underlying inflammation, infection or a malignant disorder. Various factors including the geographical distribution and the socio-economical status influence the type of disease. In India, infection due to *Mycobacterium tuberculosis* causing lymphadenopathy is

very common. A good number of cervical lymphadenopathy in elderly age groups turns out to be malignant. Hence, it is mandatory to evaluate a patient of unexplained cervical lymphadenopathy as soon as possible.<sup>4,5</sup> Histopathology is the gold standard for diagnosis. Lymph node cytology using FNAC has served to be of great help in diagnosing such lesions especially due to its ease of carrying out the procedure, minimal trauma negligible complications, and ready results. FNAC helps in the initial diagnosis and management of patients with cervical lymphadenopathy in diagnosing and post-therapy followup of primary lymph node malignancy of and in recognising metastasis or recurrence.<sup>6-8</sup> In this study the clinical presentation of patients with cervical lymphadenitis, who presented to the department of Pathology at Rohilkhand medical college and Hospital, Bareilly, India between October 31, 2016 and November 1, 2017 was recorded.

### Materials and Methods

A prospective study including FNAC on cervical lymphadenopathy was carried out. Histopathological correlation was done in all the cases that were excised. The study was conducted for a period of one year (1 November 2016 to 31 October 2017) in the department of Pathology, Rohilkhand Medical College & Hospital, Bareilly, U.P., India. All the referred patients from the clinical departments (ENT, General Surgery, Medicine) were clinically examined. History was taken regarding the duration and onset of complaints, history of fever, chills, night sweat,

weight loss, hoarseness of voice, dyspnea, dysphagia, cough, any bleeding episode, any pain, weakness, drug intake, or any other complaints.

A thorough examination of the lymph node regarding side, number, level, size, consistency, mobility, margin, skin over node, matting was done. Assessment of generalized lymphadenopathy was made. Informed consent was taken. Aseptic precautions were taken and fine needle aspiration was performed using a sterile 21 or 23 gauge needle fitted using to a 10ml syringe. The smears prepared were immediately fixed using 95% ethyl alcohol and stained by Papanicolaou stain. Few slides were air-dried and stained with May Grunwald Giemsa (MGG), Leishman – Giemsa (LG) stains were examined and cytological diagnosis was given. Histopathological correction was done wherever available. Results of cytological and histopathological findings were correlated to evaluate the efficacy of the procedure. The clinical, and pathological parameters were studied and their importance in reaching towards a diagnosis was also evaluated. Statistical calculations were done wherever applicable and a P value of  $\leq 0.05$  was considered significant.

### Observations and Results

Out of 290 cases, most common diagnosis observed in this study was reactive lymphadenitis in 78 cases (26.90%) followed by 74 cases (25.52%) of granulomatous pathology, 34 cases of necrotising lymphadenitis and 24 cases of

tubercular lymphadenitis were reported along with 16 cases of malignant epithelial lesion, 14 cases of suppurative lesion, 12 cases of metastatic squamous cell carcinoma, 2 cases of Lympho-proliferative lesion and 5 cases of Hodgkin's and Non Hodgkin's Lymphoma together (Table 1).

The average median age of the study population was 40 years. 53 study subjects presented with reactive lymphadenitis and 34 cases of granulomatous lymphadenitis with an age range of 0-19 years, 19 cases of necrotising lymphadenitis were observed in the age group of 20-39 years and 21 cases of malignancy were present in the 40-59 years category. Thus, the maximum number of cases were in the younger age group (Table 2).

In the present study, with respect to gender, 40 cases of reactive Lymphadenitis were reported in males followed by 31 cases of granulomatous lymphadenopathy and 20 cases of malignancy and in females 38 cases of reactive lymphadenitis, 46 cases of granulomatous lymphadenitis, 25 cases of necrotising lymphadenitis and 19 cases of tubercular lymphadenitis were observed. In the present study a total of 5 cases of Lymphoma were reported, 3 of which were Hodgkin's Lymphoma subtype and rest 2 were Non Hodgkin's Lymphoma. In the present study 43 cases showed 1,2,3 and 4 levels of lymph node involvement and 5 cases of SCLN and level 1,3 lymph node involvements.

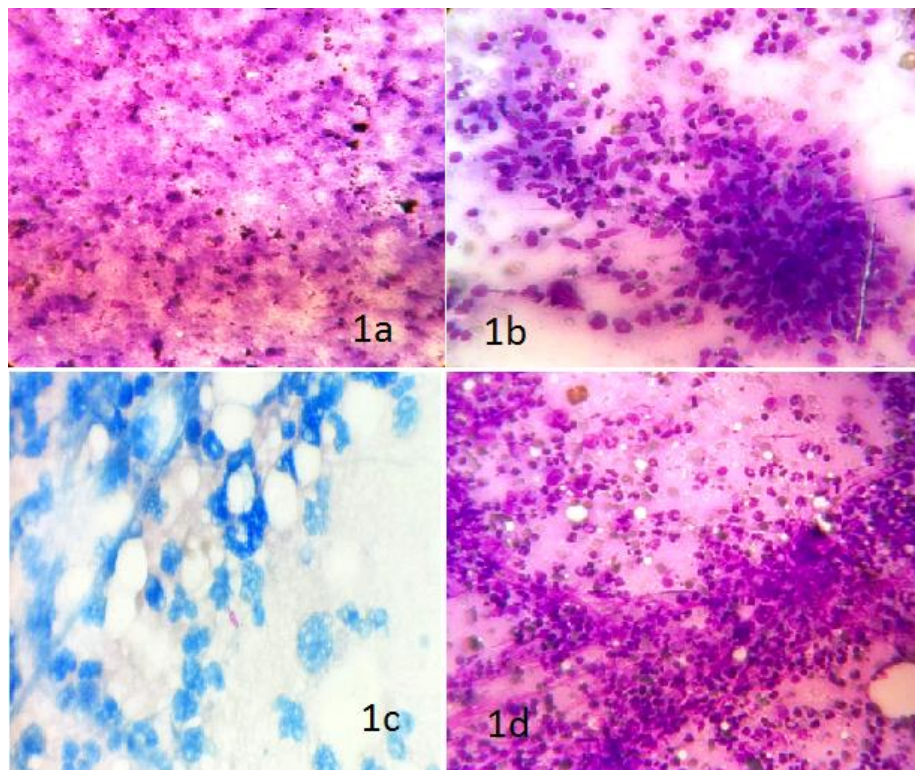


Fig. 1

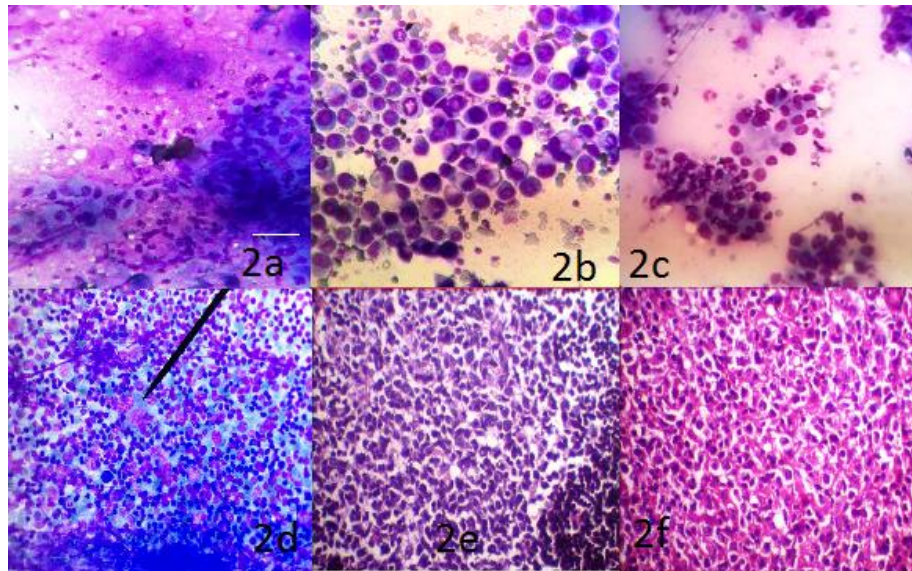


Fig. 2

Table 1: Distribution of cases as per the final diagnosis

Category	Total	%
Suppurative Lesion	14	4.87
Acute on Chronic inflammatory Pathology	7	2.41
Inflammatory Cystic Lesion	2	0.7
Necrotising Lymphadenitis	34	11.7
Tubercular lymphadenitis	24	8.2
Granulomatous Lymphadenitis	74	25.51
Reactive Lymphadenitis	78	26.89
Florid Reactive Lymphoid Hyperplasia	4	1.37
Lympho-proliferative Lesion	2	0.7
Metastatic Squamous cell Carcinoma	12	4.13
Metastatic Adenocarcinoma	10	3.43
Malignant Epithelial Lesion	16	5.51
Atypical Squamous cell	2	0.7
Hodgkin's Lymphoma	2	0.7
Non-Hodgkin's Lymphoma	3	1.03
Inconclusive	6	2.07
<b>Total No. of Cases</b>	<b>290</b>	<b>100</b>

Table 2: Age distribution of the cases and correlation with the disease category

Age range	Inflammatory		Infective		Benign/ Reactive Charges	Malignant		Inconclusive	Total	(%)
	Necrotising Lymphadenitis	Suppurative	Granulomatous	Tubercular		Lymphoma	Metastatic			
0-19	10	4	34	12	53	2	3	2	120	41.37
20-39	19	5	31	12	27	1	1	-	96	33.10
40-59	4	4	9	-	8	-	21	4	50	17.24
60-79	1	1	-	-	2	2	15	-	21	7.24
80-100	-	-	-	-	1	-	2	-	3	1.03
Total	34	14	74	24	91	5	42	6	290	100

**Table 3: Cases where cytology histology correlation was present**

Categorization on Cytology	Categorization on Histopathology	Total
Granulomatous Lymphadenitis	Tuberculosis	47
Reactive Lymphadenitis	Reactive Lymphadenitis	20
Malignant epithelial Lesion	Squamous cell Carcinoma	8
Hodgkin's Lymphoma	Hodgkin's Lymphoma	2
Non-Hodgkin's Lymphoma	Non-Hodgkin's Lymphoma	3
Grand Total		80 (27.58%)

## Discussion

Lymphadenopathy is a disorder of lymph nodes that become abnormal in consistency and also the size. Cervical lymphadenopathy is a common problem encountered in clinics and is mostly due to an infectious etiology. A systemic clinical approach is required to avoid unnecessary investigations. Cervical lymphadenopathy is a common but difficult medical condition for the family as well as the treating physician. This is a prospective study of FNAC of cervical lymphadenopathy and its histopathological correlation. In all the cases after the complete history, and physical examination and followed by pathological work-up which included haematological, biochemical tests, cytology and histopathology.

Out of the 290 cases the most common diagnosis observed was reactive lymphadenitis in 78 cases followed by 74 cases of granulomatous lymphadenitis, 34 cases of necrotising lymphadenitis and 24 cases of tubercular lymphadenitis were reported. These findings were consistent with the study by Bhadouriya et al<sup>10</sup> in 2016 who found 38 cases of reactive lymphadenitis as the most common diagnosis. Similarly in a study by Annam V et al<sup>11</sup> in 2009, reactive lymphadenitis the most predominant among all the study subjects. Fatima et al<sup>12</sup> carried a retrospective observational study with 377 neck swelling specimens in Pakistan. Of a total of 377 cases of FNAC performed on neck nodes, the most frequent cause of lymphadenopathy was found to be tuberculosis with 199 cases (52.7%), followed by reactive lymphoid hyperplasia with 61 cases (16.1%).<sup>12</sup> The results are in contrast to that of the present study. With respect to gender in the present study cases of cervical lymphadenopathy were observed more commonly in females as compared to males. The results were inconsistent with the study of Mistry RC et al<sup>13</sup> and Adeyi A Adoga et al<sup>14</sup> who have shown more of male preponderance in their study.

With respect to mobility, size, site and consistency of the lymph nodes, the results of the present study were consistent with the study of Shanmugam et al in 2016 who reported 80% of cases having size of < 3cm, 98% cases having unilateral neck presentation.<sup>15</sup> In the study by Shanmugam et al 82% of cases were having soft to firm consistency, while 8% of cases had a hard consistency.<sup>15</sup> In the present study, maximum cases had a size of 3 cm (99%).

In this study majority of the cases had a firm lymph node in 164 (56.55%) cases, followed by 114 (39.31%) cases having a soft consistency. Most cases of tubercular and

reactive lymphadenopathy were having soft to firm

consistency. However malignant cases were having hard consistency and seen in 3.79% of the cases.

In the present study total 5 cases of lymphoma were reported, majority of which were of Hodgkin's Lymphoma subtype. The findings were consistent with Mili M et al<sup>16</sup> who studied the clinical presentation of cervical lymphadenopathy with Hodgkin's 4 cases and non-Hodgkin's 3 cases.

Biswas G in 2013<sup>17</sup> carried out a study to differentiate the spectrum of clinico-demographic parameters in patients with cervical lymphadenopathy during in a 1 year study period and correlated them with cytological diagnosis. In their diagnosis, tubercular a etiology was the most prevalent diagnosis (45.4%) in contrast to the present study where we observed reactive lymphadenitis as the most common finding.<sup>16</sup>

## Conclusions

A tender neck mass is a common presenting symptom in the adult population. Patient-specific risk factors such as previous trauma, relevant travel, animal contact, and past medical history should be reviewed. Physical exam should include the site of lymph node, consistency and, tenderness. In this study, it was observed that FNAC to be a very useful diagnostic modality to identify the etiology of cervical lymphadenitis. It eliminates the need for excisional biopsy in most patients. Patients also need detailed evaluation with investigations like chest X-Ray, Mantoux test, FNAC, and histopathological examination. FNAC is a simple, safe, cost effective, well tolerated, and minimally invasive test with no reported complications. It is a reliable test in diagnosing cervical lymphadenopathy especially when used in combination with other tests. Majority of the cervical lymphadenopathies are of benign nature. Using FNAC as a diagnostic test majority of the patients can be managed conservatively and surgery is rarely required.

**Conflict of Interest:** None.

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**How to cite this article:** Singh A, Agrawal R, Mohan N, Choudhary BC. Cytopathological spectrum of cervical lymphadenopathy in a tertiary care centre of Western Uttar Pradesh. *Indian J Pathol Oncol* 2019;6(2):213-7.