

## Original Research Article

# Analysis of the histopathological findings of lymph node biopsies at a tertiary care centre

Bimal Shah<sup>1</sup>, Sarang Degloorkar<sup>1\*</sup>, Sanjay Parab<sup>1</sup>, Mita Shah<sup>2</sup>, Ria Vijay<sup>3</sup>

<sup>1</sup>Department of General Surgery, Bhaktivedanta Hospital and Research Institute, Thane, Maharashtra, India

<sup>2</sup>Department of Histopathology, Apoorva Diagnostic and Healthcare, Bhaktivedanta Hospital and Research Institute, Thane, Maharashtra, India

<sup>3</sup>Department of Medical Research, Bhaktivedanta Hospital and Research Institute, Thane, Maharashtra, India

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### \*Correspondence:

Dr. Sarang Degloorkar,

E-mail: [sarangthakur@yahoo.com](mailto:sarangthakur@yahoo.com),

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## ABSTRACT

**Background:** Lymph nodes are spread throughout the body and are routinely checked for abnormalities. These lymph nodes have the potential to become infected or malignant. The swelling of lymph nodes and the nodes which are abnormal in terms of size and/or number is commonly known as lymphadenopathy. One of the most common causes of lymphadenopathy observed is reactive lymphadenitis followed by granulomatous lymphadenitis. For diagnosis of lymph node biopsies, excisional biopsy and histopathological analysis are considered as the 'gold standard'.

**Methods:** This is a retrospective, descriptive and a cross-sectional study of all the patients with lymph node biopsies seen in Bhaktivedanta Hospital and Research Institute from January 2018 till March 2022. Histopathology reports of lymph node biopsies of patients required at Bhaktivedanta Hospital and Research Institute were included in the study.

**Results:** The most common diagnosis is of tuberculous lymphadenitis which accounted for 251 (53.2%) of the total 469 cases. Tuberculous lymphadenitis was most commonly observed in females (68.92%) as compared to males (31.07%). Cancer cases which accounted for 83 (17.70%) cases formed the second most common diagnosis in which females (53.01%) accounted for most cases as compared to males (46.99%).

**Conclusions:** Enlarged lymph nodes should undergo fine needle aspiration cytology (FNAC), truecut biopsy and/or excisional biopsy for correct diagnosis. The diagnostic spectrum ranges from benign reactive to TB and also malignancies.

**Keywords:** Lymph node biopsy, Histopathology, Tuberculous lymphadenitis, Malignancy

## INTRODUCTION

Lymph nodes are spread throughout the body and are routinely checked for abnormalities. The type of changes or abnormalities usually depend upon the intensity and type of the response.<sup>1</sup> The body of an adult contains around 800 lymph nodes, usually found at different sites like in the axilla, abdomen, neck, thorax, and groin. These lymph nodes have the potential to become infected or malignant.<sup>2</sup> The swelling of lymph nodes and the nodes which are abnormal in terms of size and/or number is commonly known as lymphadenopathy. Lymphadenopathy is usually

classified as generalised lymphadenopathy or localised lymphadenopathy, where more than half of the patients will present with localised lymphadenopathy and the rest will present with general lymphadenopathy.<sup>3</sup> In India, lymphadenopathy cases are very common and hence lymph node biopsy is an imperative measure to check for infections or malignancies. One of the most common causes of lymphadenopathy observed is reactive lymphadenitis followed by granulomatous lymphadenitis.<sup>1</sup> In cases of lymphadenopathy, lymph node biopsy is very useful to identify if there is any malignancy involved.<sup>4</sup> Out of all the infections caused by lymphadenopathy,



Tuberculosis is the most common cause of lymphadenopathy.<sup>5</sup> The high prevalence of TB can be due to poor living conditions in underdeveloped and developing countries.<sup>6</sup> For diagnosis of lymph node biopsies, excisional biopsy and histopathological analysis are considered as the 'gold standard'.<sup>7</sup>

The objective of the study was to conduct histopathological analysis of lymph node biopsies at a tertiary care centre.

## METHODS

This is a retrospective, descriptive and a cross-sectional study of all the patients with lymph node biopsies seen in Bhaktivedanta Hospital and Research Institute from January 2018 till March 2022. As the study was retrospective duration-based design, patients for whom the biopsy samples were available in 4 years from 2018-2022 were included in the study. Ethical approval from the Institutional Ethics Committee was obtained for this study. Histopathology reports of lymph node biopsies of patients required at Bhaktivedanta Hospital and Research Institute were included in the study. Patients who underwent any other biopsy except lymph node biopsy were not included in the study. The specimen when taken from the patient's body is stored in a container with 10% neutral buffered formalin (NBF). The specimen collected is sent to the pathology lab for histopathological analysis and diagnosis. The container containing the specimen is labelled and sent to the lab. The sample is processed in multiple steps. Firstly, sample acceptance and numbering are done in the lab after which grossing of the sample is done. Tissue processing and embedding is then carried out after which block cutting of the samples is done. The samples then undergo hematoxylin and eosin staining. The sample will then be mounted, labelled and arranged in trays. The final report is submitted to the pathologist for analysing the samples. The histopathological data will be obtained from the histopathology registers containing the reports from the pathology lab of Bhaktivedanta Hospital and Research

Institute. Demographic data will also be obtained from the same. Statistical tests will be applied to analyse the histopathological data.

## RESULTS

The total number of cases of lymph node biopsies available were 469 over the period of four years from January 2018 to May 2022. The diagnosis of lymph node biopsies was categorised into seven diagnoses. Out of the total 469 cases, females account for 299 (63.75%) cases which are in majority as compared to males which account for 170 (36.25%) cases. The male to female ratio for the same is 0.57:1. The most common diagnosis is of tuberculous lymphadenitis which accounted for 251 (53.2%) of the total 469 cases. Tuberculous lymphadenitis was most commonly observed in females (68.92%) as compared to males (31.07%). Cancer cases which accounted for 83 (17.70%) cases formed the second most common diagnosis in which females (53.01%) accounted for most cases as compared to males (46.99%). This was followed closely by 68 cases (14.50%) of granulomatous lymphadenitis (Table 1).

Out of the total 469 cases of lymph node biopsies, 316 (67.38%) cases were reported at the cervical location. Tuberculous lymphadenitis that accounted for 184 (39.23%) cases at cervical were found to be most at cervical location. This was followed by 14 (2.99%) cases of cancer which were most prevalent at inguinal/groin location which accounted for a total 26 (5.54%) cases (Table 2).

Based on age grouping, the age group of 21-30 contained 125 (26.65%) cases of lymph node biopsies, out of which 80 (17.06%) cases were of tuberculous lymphadenitis. Overall, in every age group, the maximum number of cases were of tuberculous lymphadenitis [251 (53.52%) cases] out of the total 469 cases of lymph node biopsies (Table 3).

**Table 1: Diagnosis of lymph node biopsies.**

Diagnosis	Count	%	Male	Female	Ratio
<b>Tuberculous lymphadenitis</b>	305	65.03	100	205	1:2
<b>Cancer</b>	83	17.70	39	44	1:1.1
<b>Reactive</b>	68	14.50	27	41	1:1.5
<b>Bacterial infection</b>	7	1.49	1	6	1:6
<b>Histiocytic necrotizing lymphadenitis</b>	5	1.07	2	3	1:1
<b>Cat scratch</b>	1	0.21	1	0	1:0
<b>Total</b>	469		170 (36.25)	299 (63.75)	1:1.7

**Table 2: Diagnosis of lymph node biopsies based on location.**

Location	Count (%)	Tuberculous lymphadenitis (%)	Cancer (%)	Reactive (%)	Bacterial infection (%)	Histiocytic necrotizing lymphadenitis (%)	Cat scratch (%)
<b>Cervical</b>	316 (67.38)	225 (47.97)	39 (8.32)	44 (9.38)	4 (0.85)	5 (1.07)	0 (0.00)
<b>Axillary</b>	69 (14.71)	30 (6.4)	19 (4.05)	16 (3.41)	2 (0.43)	0 (0.00)	1 (0.21)
<b>Neck</b>	28 (5.97)	15 (3.2)	6 (1.28)	7 (1.49)	0 (0.00)	0 (0.00)	0 (0.00)

Continued.



Location	Count (%)	Tuberculous lymphadenitis (%)	Cancer (%)	Reactive (%)	Bacterial infection (%)	Histiocytic necrotizing lymphadenitis (%)	Cat scratch (%)
Inguinal/groin	26 (5.54)	11 (2.35)	14 (2.99)	0 (0.00)	1 (0.21)	0 (0.00)	0 (0.00)
Abdomen	26 (5.54)	20 (4.26)	5 (1.07)	1 (0.21)	0 (0.00)	0 (0.00)	0 (0.00)
Chest thorax	4 (0.85)	4 (0.85)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
<b>Total</b>	469	305 (65.03)	83 (17.70)	68 (14.50)	7 (1.49)	5 (1.07)	1 (0.21)

Table 3: Diagnosis of lymph node biopsies based on age groups.

Age groups	Count (%)	Tuberculous lymphadenitis (%)	Cancer (%)	Reactive (%)	Bacterial infection (%)	Histiocytic necrotizing lymphadenitis (%)	Cat scratch (%)
≤10	20 (4.26)	8 (1.71)	2 (0.43)	9 (1.92)	1 (0.21)	0 (0.00)	0 (0.00)
11-20	52 (11.09)	32 (6.82)	3 (0.64)	12 (2.56)	1 (0.21)	3 (0.64)	1 (0.21)
21-30	125 (26.65)	96 (20.47)	9 (1.92)	15 (3.20)	3 (0.64)	2 (0.43)	0 (0.00)
31-40	72 (15.35)	53 (11.3)	8 (1.71)	10 (2.13)	1 (0.21)	0 (0.00)	0 (0.00)
41-50	52 (11.09)	38 (8.11)	9 (1.92)	5 (1.07)	0 (0.00)	0 (0.00)	0 (0.00)
51-60	73 (15.57)	36 (7.68)	27 (5.76)	10 (2.13)	0 (0.00)	0 (0.00)	0 (0.00)
61-70	52 (11.09)	30 (6.4)	15 (3.20)	6 (1.28)	1 (0.21)	0 (0.00)	0 (0.00)
71-80	18 (3.84)	10 (2.13)	8 (1.71)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
≥81	5 (1.07)	2 (0.43)	2 (0.43)	1 (0.21)	0 (0.00)	0 (0.00)	0 (0.00)
<b>Total</b>	469	305 (65.03)	83 (17.70)	68 (14.50)	7 (1.49)	5 (1.07)	1 (0.21)

## DISCUSSION

Patients with enlarged lymph nodes are very commonly seen in routine practice.<sup>8</sup> With the help of excisional biopsy and histopathological analysis, early diagnosis can be made which is essential for management of the enlarged lymph nodes.<sup>9</sup> This study was conducted over a period of four years to analyse the histopathological findings of lymph node biopsies in patients at a tertiary care centre. In this study majority of the biopsies turned out to be of females with male to female ratio being 1:1.7. These results were similar with the results reported by other studies where female dominance was seen.<sup>1,3,5,9,10</sup>

Almost 65% of the total lymph node biopsies were of tuberculous lymphadenitis which was the most common finding reported. Similar findings have been obtained from some tropical and developing countries.<sup>11-14</sup> However, in a study by Damle et al conducted at a site in Maharashtra, the cases of tuberculous were not the most common finding reported.<sup>1</sup> The high prevalence of TB can be due to poor living conditions in underdeveloped and developing countries.<sup>6</sup> Tuberculous lymphadenitis was found more commonly in females as compared to males. Similar findings were observed in multiple populations.<sup>15</sup>

In our study the second most common finding after TB was cancer followed by reactive with 17.7% and 14.5% cases respectively. However, in many studies reported by Kamat et al, and Rahman et al, reactive lymphadenitis was found

to be the second most common finding reported after TB.<sup>3,10</sup> In several other studies, reactive change was found to be most common and was followed by TB. Such findings were reported in some African regions by Moore et al, Oluwole et al, and Sibanda et al.<sup>7,16,17</sup> Cancer was found to be the fourth common cause of lymphadenopathy according to findings reported by Rahman et al and Shrestha et al whereas in our study it was the second most prevalent cause of lymphadenopathy.<sup>10,13</sup> In our study the most common location of lymphadenopathy was found to be cervical lymph nodes (67.38%). This result was consistent with findings reported by other studies conducted in various parts of India.<sup>9,18,19</sup> Similar findings were also obtained in other countries apart from India.<sup>13,20</sup> Axillary was found to be the second most common location after cervical lymph nodes. This result was similar with the findings reported by studies across the world.<sup>18-20</sup> Of all the cervical lymph node biopsies, the most common histopathological finding was tuberculous lymphadenitis followed by reactive disease in our study whereas in a study conducted by Al-Tawfiq et al in Saudi Arabia reported reactive disease to be the most common histopathological finding.<sup>21</sup> Maximum number of cases of lymphadenopathies were found to be under the age group of 21-30 years. Most cases of TB lymphadenitis affected the 21-30 years age group. This finding was consistent with other studies as well.<sup>6,10,11,20</sup> The limitation of the study is that, firstly, it is only conducted at one particular centre. Secondly, since the study is retrospective in nature, the analysis was based on existing patient data.



## CONCLUSION

Enlarged lymph nodes should undergo FNAC, truecut biopsy and/or excisional biopsy for correct diagnosis. The diagnostic spectrum ranges from benign reactive to TB and also malignancies.

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