

## Fine Needle Aspiration Cytology of Lymphnode Lesions in a Rural Setup.

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**Abstract: Background:** Lymphadenopathy refers to enlargement of lymph nodes. It is a common clinical presentation. It can be caused due to various etiologies ranging from infections to malignancies. Fine Needle Aspiration Cytology can be done easily on superficial lymphadenopathies as they are accessible. FNAC is a simple, cost effective procedure which is minimally invasive. It helps in diagnosing lymphadenopathies due to various etiologies and plan the treatment accordingly. Tuberculosis is the most common cause of lymphadenopathy in India.

**Aims and objectives:** To study cytomorphological patterns of lymphadenopathy due to various etiologies and to know the frequency of various diseases in different age groups.

**Materials and methods:** This is a one year prospective study done from January 2018 to January 2019 on 244 cases, of which 63.9% were females and 36.1% are males.

**Results:** Most of the cases of lymphadenopathies fall in the age group of 21-30 years (28.6%). Cervical lymph nodes (84.3%) are most common group of lymph nodes involved. Tuberculous lymphadenitis (46.7%) is the most common etiology in our study that too with a female preponderance.

**Conclusion:** FNAC is simple n cost effective way of diagnosing lymphadenopathy. Tuberculous lymphadenitis is most common cause of lymphadenopathy and every case of granulomatous lymphadenitis should be considered as tuberculosis unless proved otherwise.

**Key Words:** Fine Needle Aspiratin Cytology, Granulomatous, Lymphadenopathy,

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### I. Introduction

Lymph nodes are an important part of immune system<sup>[1,5]</sup>. They are affected by many physiological and pathological processes and present as enlarged nodes, which is known as lymphadenopathy. Lymphadenopathy is a commonly encountered clinical condition<sup>[1,3,4]</sup> and can be a manifestation of various disease processes ranging from infections to a malignant conditions<sup>[1]</sup>. Enlarged superficial lymphnodes are easily accessible for performing Fine Needle Aspiration Cytology(FNAC) for diagnosing most of the lesions of lymph nodes. FNAC is a simple and inexpensive procedure which can be performed on an outpatient basis<sup>[2,3,4]</sup>. This can help in reducing more time consuming, expensive and invasive procedures like excision biopsies<sup>[3]</sup>. Knowledge regarding causes of lymphadenopathy in a particular geographic area helps in minimizing differential diagnosis and giving a proper diagnosis and treatment to the patient.<sup>[4,5]</sup>

### II. Materials and Methods

A prospective study was conducted on patients presenting with lymphadenopathy which were referred to Department of Pathology, Government General Hospital, Nizamabad, Telangana, India for Fine Needle Aspiration Cytology. Government general hospital provides services for the rural area with more than 3 lakh outpatients and inpatients around 75000 per year. Study was conducted over a period of one year from January 2018 to January 2019. A total of 977 cases were referred for FNAC which included 244 cases of lymphadenopathy. Written consent, detailed clinical history and clinical examination of these cases was taken up and FNAC was carried out using 23 Gauge 5cc disposable syringes. Aspirated material was smeared on minimum of three labelled glass slides. All the slides were fixed with 95% isopropyl alcohol stained with routine haematoxylin and eosin stain as per protocol. The stained smears were submitted for microscopic examination and interpretation was done.

### III. Results

FNAC was done for a total of 977 cases and which included 244 cases of lymphadenopathy. Out of 244 cases presenting with lymphadenopathy females were common 156 (63.9%) and 88 (36.1%) were males. Age of the patients youngest was 2 Years and older one is of 70 Years.

**Table No 1: Age wise and Gender wise distribution of cases**

AGE	MALES	FEMALES	TOTAL NO OF CASES
0-10 YEARS	18 (20.45%)	15 (9.6%)	33 (13.5%)
11-20 YEARS	22 (25.03%)	38 (24.4%)	60 (24.5%)
21-30 YEARS	15 (17.15%)	55 (35.2%)	70 (28.6%)
31-40 YEARS	16 (18.1%)	28 (17.9%)	44 (18.0%)
41-50 YEARS	12 (13.6%)	13 (8.3%)	25 (10.2%)
51-60 YEARS	01 (1.13%)	05 (3.3%)	06 (2.6%)
61-70 YEARS	04 (4.54%)	02 (1.3%)	06 (2.6%)
TOTAL	88	156	244

Table 1 shows lymphadenopathy is more common in females compared to males. Most of the cases fall under the age group of 21 -30 years followed by 11-20 years which accounts to 70 (28.6%) and 60 (24.5%) respectively.

**Table No 2: Distribution of Lesions according to group of lymphnodes involved**

Group of Lymphnodes involved	No of cases	Non specific Lymphadenitis	Reactive lymphadenitis	Granulomatous lymphadenitis	Caseating Granulomatous lymphadenitis	Cold abscess	Acute suppurative lymphadenitis	Lympho proliferative disorder	Metastasis to lymphnodes
CERVICAL	206 (84.3%)	25 (12.6%)	30 (14.5%)	40 (19.3%)	65 (31.4%)	20 (9.7%)	20 (9.7%)	02 (0.9%)	04 (1.9%)
AXILLARY	15 (6.1%)	01 (6.7%)	00 (00%)	05 (33.3%)	06 (40%)	01 (6.7%)	00 (00%)	00 (00%)	02 (13.3%)
SUPRA CLAVICULAR	17 (6.8%)	01 (5.9%)	01 (5.9%)	05 (29.4%)	05 (29.4%)	04 (23.5%)	01 (5.9%)	00 (00%)	00 (00%)
INGUINAL	07 (2.8%)	00	01 (14.3%)	019 (14.3%)	02 (28.6%)	00 (00%)	02 (28.6%)	01 (14.3%)	00 (00%)
TOTAL	244	27	33	51	78	25	23	03	06

Table :2 shows that Cervical group of lymph nodes are most commonly involved group (84.3%). It has been observed that most common cause of cervical lymphadenopathy is tuberculosis (50.9%) which includes both Caseating granulomatous lymphadenitis and Cold abscess cases. 19.3% cases are diagnosed as Granulomatous lymphadenitis which could be of various etiologies including most common Tuberculous lymphadenitis. Any case of Granulomatous lymphadenitis should be considered as tuberculosis unless until proved otherwise and they should be followed up with a repeat FNAC and other tests like acid fast staining and CBNAAT should be performed to arrive at a diagnosis.

**Table 3: Age wise distribution of lesions**

Age in Years	Non Specific lymphadenitis	Reactive lymphadenitis	Granulomatous S lymphadenitis	Caseating granulomatous lymphadenitis	Cold abscess	Acute suppurative lymphadenitis	Lympho proliferative disorder	Metastasis lymphnode
0-10	04 (17.4%)	08 (25%)	09 (19.5%)	07 (7.8%)	00 (00%)	04 (19%)	01 (50%)	00 (00%)
11-20	09 (39.2%)	13 (40.6%)	08 (17.5%)	22 (24.8%)	06 (24%)	02 (9.5%)	00 (00%)	00 (00%)
21-30	03 (13%)	08 (25%)	17 (36.9%)	26 (29.2%)	12 (47%)	03 (14.3%)	00 (00%)	01 (16.7%)
31-40	06 (26%)	01 (3.2%)	08 (17.4%)	17 (19.1%)	04 (16%)	06 (28.6%)	00 (00%)	01 (16.7%)
41-50	00 (00%)	01 (3.2%)	02 (4.4%)	13 (14.5%)	02 (08%)	05 (23.8%)	00 (00%)	02 (32.2%)
51-60	00 (00%)	00 (00%)	02 (2.3%)	02 (2.3%)	00 (00%)	01 (4.8%)	01(50%)	01 (16.7%)
61-70	01 (4.4%)	01 (3.2%)	00 (00%)	02 (2.3%)	01 (5%)	00 (00%)	00 (00%)	01 (16.7%)
Total	23	32	46	89	25	21	02	06

Table 3 shows that Non specific lymphadenitis (39.2%) and Reactive lymphadenitis are more common in age group of 11-20 years. Granulomatous lymphadenitis (36.9%), Caseating granulomatous lymphadenitis (29.2%) and Cold abscess (47%) are more common in age group of 21-30 years. Metastatic deposits to lymph nodes are seen in elderly age group. Metastaic deposits of Duct cell carcinoma of breast are more common in females and Squamous cell carcinoma is more common in males.

**Table 4: Age wise and Gender wise distribution of Tuberculous lymphadenopathy**

Age in Years	Caseating granulomatous lymphadenitis		Cold abscess	
	MALES	FEMALES	MALES	FEMALES
0-10	01	06	00	00
11-20	07	15	02	04
21-30	08	18	03	09
31-40	05	12	01	03
41-50	06	07	00	02
51-60	01	01	00	00
61-70	01	01	00	01
Total	29	60	06	19

Table 4 shows that females are more commonly affected with tuberculosis than males. Possible reasons for increased prevalence among females may be because of malnutrition and weak immunity.

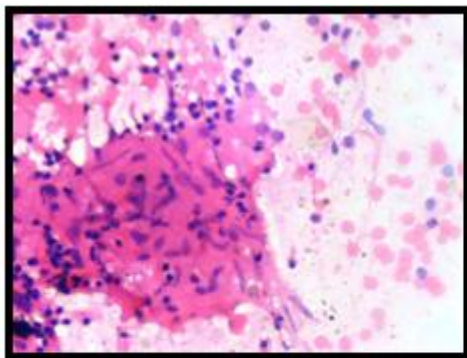


Fig1: Granulomatous lymphadenitis showing clusters of epithelioid cells.

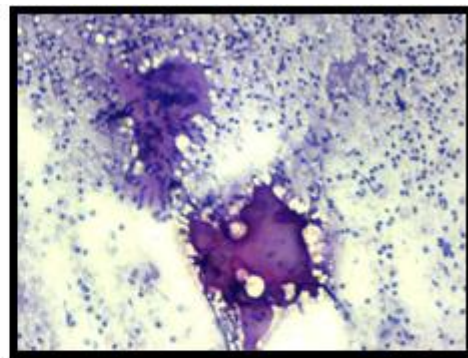


Fig 2: Caseating granulomatous lymphadenitis showing caseous necrosis and epithelioid cluster

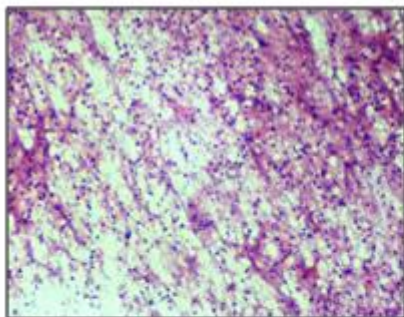


Fig 3: Cold abscess- showing degenerated neutrophils, epithelioid cells and caseous necrotic material.

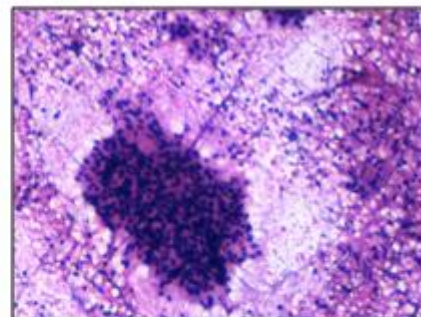


Fig 4: Metastatic deposits – lymphnode aspirate showing epithelial cell clusters.

#### IV. Discussion

Lymphadenopathy is one of the common clinical presentations. It can be physiological or pathological ranging from non neoplastic conditions like reactive lymphadenitis, non specific lymphadenitis, acute suppurative lymphadenitis, caseating and non caseating lymphadenitis to malignant conditions which include lymphoproliferative disorders and metastatic deposits. FNAC is an easy, inexpensive and valuable diagnostic tool in evaluation of superficial lymphadenopathy. This will minimize the usage of invasive diagnostic and therapeutic procedures like core biopsy or excision biopsy thereby preventing complications like sinus formation in case of tuberculous lymphadenitis.

In the series of cases studied in present study females (63.9%) are more commonly effected compared to males (36.1%). Similar findings are seen in studies done by Ramanan Duruswamai et al (61%)<sup>[3]</sup> and Prabhakar et al (62.42%)<sup>[5]</sup>.

In present study most of the cases were in the age group of 21-30 years (28.6%), similar findings were seen in Sachin et al<sup>[1]</sup>, Chandwale et al<sup>[6]</sup> and Prabhakaran et al (36.6%)<sup>[5]</sup>. Most common group of lymph nodes involved is cervical group of lymph nodes which comprised to 77.41%. These findings are favorably correlating with studies done by Sachin et al(77.4%)<sup>[1]</sup>, Hirachand et al<sup>[7]</sup>, khajura et al<sup>[8]</sup>, Gayatri et al (74.6%)<sup>[4]</sup>, Prabhakar et al (74.2%)<sup>[5]</sup>, Uma et al (62.9%), Florence et al (67.5%)<sup>[10]</sup>.

Of all the non neoplastic and neoplastic etiologies of lymphadenopathy, tuberculous etiology (46.7%) is more common which includes both caseating granulomatous lymphadenitis and cold abscess. Such findings are also seen in studies conducted by Sachin et al (48.7%)<sup>[1]</sup>, Khajura et al (52.3%)<sup>[8]</sup>, Prabhakaran et al (32.12%)<sup>[5]</sup>, Florence et al(35.9%)<sup>[10]</sup>, Akanksha Mitra et al (35%)<sup>[11]</sup>, Patra et al (37.8%)<sup>[12]</sup>. In contrast studies done by Ramanan Duruswamai et al<sup>[3]</sup> and Gayatri et al<sup>[4]</sup> conducted in urban areas like Hyderabad and Mysore respectively showed reactive hyperplasia as a most common etiology for Lymphadenopathy in those areas.

In present study non neoplastic conditions were more common compared to neoplastic conditions. Only 1.5% cases are diagnosed as lymphoproliferative disorder which is also seen in studies conducted by Sachin et al(0.96%)<sup>[1]</sup>, Khan et al(2%)<sup>[13]</sup>, Ramanan Duruswamai et al (1.6%)<sup>[3]</sup>, Florence et al (1.9%)<sup>[10]</sup>.

Metastatic deposits to lymph node were diagnosed in 2.4% of cases which were more common in males and squamous cell carcinoma is the most common malignancy (66.6%). Patra et al showed metastatic deposits in 3.8% cases<sup>[12]</sup>, Squamous cell carcinoma is also found to be most common malignancy metastasizing to lymph nodes in studies conducted by Sachin et al (41.66%)<sup>[1]</sup>, Hemlatha et al (60%)<sup>[14]</sup> and Patel et al (75.5%)<sup>[15]</sup>.

#### IV. Conclusion

Fine Needle Aspiration Cytology (FNAC) is easy and inexpensive procedure in diagnosis of superficial enlarged lymph nodes. It has been found that tuberculous lymphadenitis is most common etiology for lymphadenopathy in this study with a female preponderance. Any case of granulomatous lymphadenitis with or without caseous necrosis should be considered as tuberculosis unless otherwise proved in areas of high prevalence of tuberculosis. Metastatic deposits to lymph node is seen in elderly age group. Cervical lymph nodes are most commonly involved group of lymph nodes by various etiologies most common for tuberculous granulomatous lymphadenitis and is also metastasis in these group of lymph nodes in elderly particularly squamous cell carcinoma.

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