



## FINE NEEDLE ASPIRATION CYTOLOGY OF CERVICAL LYMPHNODES IN PEDIATRIC AGE GROUP

### Pathology

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### ABSTRACT

**Introduction:** Cervical Lymphadenopathy in pediatric age group can be physiological as well as pathological thus challenging and a source of anxiety both for clinicians and parents. There are numerous etiological factors but the commonest cause is a reaction to some symptomatic or asymptomatic inflammatory process. FNAC is a safe, simple and economical diagnostic tool to study various cytomorphological patterns of lymphadenopathy so as to arrive at a definitive diagnosis and administer proper treatment. **Material and Method:** This is a 2 year retrospective study from 1st Jan 2015 to 31st Dec 2016. A total of 184 children from 0-18 years with significant cervical lymphadenopathy (>1cm) attended cytology section of the pathology department of Govt Medical college Jammu. **Results:** There were 114 males and 70 females with a M:F ratio of 1.62:1. The age group varied from 0-18 years with the maximum cases (n=66) 35.86% seen in 6-12 years followed by that in 12-18 years (n=60) 32.60%. In the present study, the commonest cause of pediatric cervical lymphadenopathy was found out to be Non Specific Reactive Lymphadenitis (n=138) 75%, followed by tubercular lymphadenitis confirmed by Ziehl-Neelsen stain in (n=20) 10.86%. Diagnosis of lymphoproliferative disorder was given in (n=3) 1.63% cases only. **Conclusion:** FNAC is a reliable, economical and minimally invasive procedure for interpretation of various cytomorphological patterns of lymphadenopathy in pediatric age group.

### KEYWORDS:

Fine needle aspiration cytology, Pediatric, Cervical.

### INTRODUCTION

Lymph nodes are an important anatomic component of Immune system which react to various known and unknown stimuli by undergoing reactive changes. Cervical nodes form a major composition in lymphatic system, clustered in small groups draining respective anatomic regions. There are many causes of enlarged lymph nodes right from inflammation, infection to malignancy. Tuberculosis which is rampant in our country is an important cause of pediatric lymphadenopathy which if diagnosed correctly can be totally cured.

Lymph node aspiration for diagnostic purpose was first reported by Greig and Gray in 1904 in the diagnosis of trypanosomiasis<sup>12</sup>. FNAC is a reliable, safe and simple diagnostic procedure for interpretation of various cytomorphological patterns of cervical lymphadenopathy with good certainty and to know their frequency in lymph node aspirates.

### MATERIAL & METHOD

This is a two year retrospective study done in Pathology Department of Government Medical College Jammu from 1<sup>st</sup> Jan 2015 to 31<sup>st</sup> Dec 2016 in children between 0-18 years with significant cervical lymphadenopathy ( $\geq 1$  cm). Detailed history regarding age, sex, duration, symptoms (fever, cough), any previous intake of ATT, peripheral blood film examination in suspected lymphomas was taken. A thorough local and systemic examination was done. After taking consent from parents, FNAC was done under all aseptic precautions using 22 gauge needle and slides were prepared. Staining was done with MGG (dry fixation) and Pap (wet fixation) stain. In all the cases pus was aspirated Ziehl Neelsen stain for Acid fast bacilli was performed.

### RESULTS

The present study comprised of 184 cases with 114 males and 70 females. The M:F ratio was 1.62:1. The age group varied from 0-18 years with the maximum cases seen in 6-12 years (n=66) 35.86% followed by (n=60) 32.60% cases in 12-18 years. Table 1.

Out of 184 lymph node aspirated maximum cases were of Non Specific Reactive Lymphadenitis (n=138) 75%, followed by Tubercular lymphadenitis in (n=20) 10.86%, Granulomatous lymphadenitis in (n=14) 7.60%, Suppurative lymphadenitis in (n=4) 2.17% and lymphoproliferative disorder in (n=3) 1.63%. Cases with unsatisfactory material were (n=5) 2.71% as the result was bloody aspirate in 2 cases and 3 cases yielded non lymphoid material. Table 2

The peak incidence of Non Specific Reactive Lymphadenitis was seen in 6-12 years (n=53) followed by that in 1-6 years

(n=45). Granulomatous lymphadenitis was seen maximally in 12-18 years (n=10). Tubercular lymphadenitis cases were seen mostly in both 12-18 years with 9 cases. Table 3

The lymph node aspirates which showed epithelioid cell granulomas in a reactive lymphoid background were regarded as Granulomatous where as those aspirates which were AFB stain positive or showed abundant amorphous granular necrotic material were reported as tubercular lymphadenitis.

**Table 1 Age and Sex distribution of Total cases.**

| Age group (year) | Male (n=114) | Female (n=70) | Total (n=184) |
|------------------|--------------|---------------|---------------|
| < 1 year         | 2            | 5             | 7             |
| 1-6              | 42           | 9             | 51            |
| 6-12             | 46           | 20            | 66            |
| 12-18            | 24           | 36            | 60            |

**Table 2 Patterns of lymphadenopathy in 184 cases.**

| Cytological diagnosis               | No of cases | Percentage(%) |
|-------------------------------------|-------------|---------------|
| Non Specific Reactive lymphadenitis | 138         | 75            |
| Tubercular Lymphadenitis            | 20          | 10.86         |
| Granulomatous lymphadenitis         | 14          | 7.60          |
| Suppurative lymphadenitis           | 4           | 2.17          |
| Unsatisfactory                      | 5           | 2.71          |
| Lymphoproliferative Disorder        | 3           | 1.63          |
| Total                               | 184         | 100           |

**Table .3 Correlation of age group with Cytological Diagnosis.**

| Cytological diagnosis               | <1 year | 1-6 (year) | 6-12 (year) | 12-18 (year) | Total |
|-------------------------------------|---------|------------|-------------|--------------|-------|
| Non-Specific Reactive Lymphadenitis | 4       | 45         | 53          | 36           | 138   |
| Tubercular Lymphadenitis            | 0       | 3          | 8           | 09           | 20    |
| Granulomatous Lymphadenitis         | 0       | 0          | 4           | 10           | 14    |
| Suppurative Lymphadenitis           | 1       | 1          | 0           | 2            | 4     |
| Unsatisfactory                      | 1       | 2          | 1           | 1            | 5     |
| Lymphoproliferative Disorder        | 1       | 0          | 0           | 2            | 3     |
| Total                               | 7       | 51         | 66          | 60           | 184   |

### DISCUSSION

FNAC of cervical lymph nodes in pediatric age group is a very important part of initial diagnosis and work up, thus minimizing the trauma of excision biopsy. In the present study the commonest age

group affected was 6-12 years (n=66)35.86% followed by 12-18 years (n=60)32.60% .This is comparable with the studies of Ponder TB<sup>3</sup> and Wakely PE<sup>4</sup> they also found that majority cases were seen in age group of 6-11 years(32.82%). Handa U et al<sup>5</sup> however found maximum cases in 7-9 years .

Male to female ratio in present study was 1.62:1 showing male dominance .Leon Van de School et al<sup>6</sup> also observed male dominance with a M:F ratio of 1.2:1.Moore et al<sup>7</sup> however found a still higher M:F ratio of 3:1 .This may be due to gender bias in Indian society.

In this study ,maximum number of cases diagnosed on FNAC were of Non specific reactive lymphadenitis(n=138)75%.This is due to frequent infections of nose ,ear and throat in pediatric age group.Similar findings were observed by Maria et al<sup>8</sup> (70%) and Sharique A et al<sup>9</sup> (69.20%).Present study also matches with that of Somaiah G et al<sup>10</sup>.(76.2%).Second commonest cause found in this study was Tubercular lymphadenitis (n=20) 10.86% Fig1.Maria et al<sup>8</sup> also had similar findings (14%) .Ruchi et al<sup>11</sup>

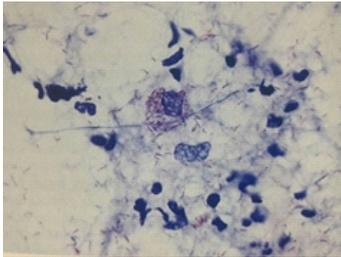
) however found tuberculosis to be the commonest cause (36.74%) of cervical lymphadenopathy.Tuberculosis is an important cause of childhood morbidity and mortality in a developing country like ours ,despite many schemes and latest advances by the government.

Diagnosis of Granulomatous lymphadenitisFig2. was given when well formed epithelioid cell granulomas were seen in a reactive lymphoid background and the AFB stain for tubercular bacilli was negative .There are many causes of granulomatous lymphadenitis like bacterial ,fungal ,parasitic infections ,certain tumors like hodgkins lymphoma .In the present study granulomatous lymphadenitis was found in (n=14 ) 14.6% cases .Somaiah et al<sup>10</sup> also found similar results(14%) .

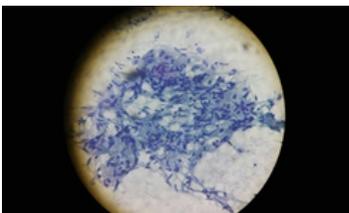
Suupurative lymphadenitis(Fig3) was diagnosed in 4 cases only. Smears showed degenerated and viable polymorphonuclear cells in a necrotic background along with a few lymphoid cells .Diagnosis of lymphoproliferative disorder was given in (n=3) 1.63% cases .Ruchi et al<sup>11</sup> in their study found 4 cases of lymphoma . All 3 cases of lymphoproliferative disorder(Fig4) diagnosed in the present study were advised immunocytochemistry and excision biopsy.

## CONCLUSION

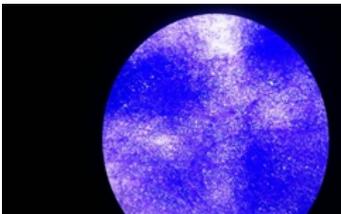
FNAC is a good first line of modality for interpretation of patterns of lesions in cervical lymphnodes without the limitation of complication .



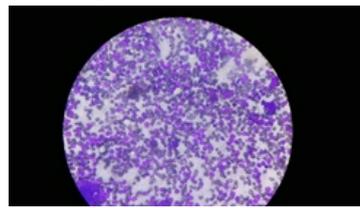
**Fig 1: Acid fast Bacilli (Ziehl Neelsen stain) in Tubercular Lymphadenitis.**



**Fig.2 Well formed epithelioid cell granuloma in Granulomatous lymphadenitis.**



**Fig.3 Suppurative Lymphadenitis (Giemsa stain)**



**Fig.4 Monomorphic atypical cells : Lymphoproliferative disorder (Giemsa) .**

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