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Original Research Article

# Clinicopathologic Profile of Peripheral Lymphadenopathy in Children

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**Abstract**

**Introduction:** To devise a diagnostic modality for lymphadenopathy which is both cost-effective and has a high accuracy.

**Aims and Objectives:** To find out diagnostic accuracy of FNAC as compared to the "GOLD STANDARD "of excisional LN biopsy as well as to understand the limitations of the technique.

**Materials and Methods:** 215 pediatric cases up to 12 years age presented during a duration of 5 years with node size preferably more than 1 cm located peripherally. FNAC was done in all cases and biopsy was done to determine the accuracy of the technique and where needed

**Results:** Diagnostic accuracy of FNAC was 90.16%, being 100% for TB & lymphoma

**Conclusion:** FNAC as a diagnostic modality is almost as sensitive & specific as excisional biopsy with an adequate smear and examination by expert eyes.It can obviate the need for biopsy in majority of the cases minimizing the need for hospitalization, trauma and scars of surgery.

**Keywords:** Lymphnode, Fine Needle Aspiration Cytology (FNAC), Tissue Biopsy, Tuberculosis, lymphoma.



## Introduction

Britishers call lymph nodes as dust bins while Americans refer them to as garbage cans of the body. This was the concept a 100 yrs. ago. Which has evolved now into a system of immense importance because of varied presentations in various diseases and the diagnostic dilemma even after exhaustive research. Lymphadenopathy especially in children provoke concern, curiosity, & worry not only amongst parents but also amongst clinicians. Diagnostic accuracy with modern techniques is very high as well the treatment modalities are equally effective giving 100% results…both of which are very costly. Also, clinicians & pathologists should be aware of some facts:

Lymphadenopathy has a geographic distribution not only worldwide but in India too it has region to region variation. Presentation of diseases can be varied…some viral diseases presenting as generalized lymphadenopathy while pediatric Hodgkin disease presents as localized lymphadenopathy as against general belief. As a medical faculty, we must remember that Indian population is composed of both affluent and non-affluent classes. Hence we must devise a diagnostic modality for lymphadenopathy

which is both cost-effective and has a high accuracy.

**Aims & Objectives**

- To evaluate lymphadenopathy in children less than 12 years of age.
- To find out possible etiological factor as determined with help of history, physical examination, CBC, immunological/serological titres, CXR, FNAC and biopsy wherever & if needed.
- To determine indications for L N biopsy as a valuable diagnostic tool.
- To find out diagnostic accuracy of FNAC as compared to the "GOLD STANDARD " of excisional LN biopsy as well as to understand the limitations of the technique.

**Materials and Methods**

- **Study duration:** 5 years
- N = 215
- **Inclusion criteria:** all pediatric cases upto 12 years of age with node size preferably more than 1 cm located peripherally
- **Exclusion criteria:** enlarged nodes located in deep body cavities in children >12 years of age.
- Detailed clinical examination to find out the probable cause for lymphadenopathy along with pertinent investigations were done. FNAC was done in all cases and biopsy was done to determine the accuracy of the technique and where needed.

**Observations & Discussion**

**Table 1: Age & sex distribution**

| Age in years | Males | Females | Total | Percentage |
|---|---|---|---|---|
| 0 – 2 | 15 | 4 | 19 | 8.33 |
| Above 2 – 4 | 18 | 12 | 30 | 13.95 |
| Above 4 – 6 | 27 | 15 | 42 | 19.53 |
| **Above 6 – 8** | **26** | **21** | **47** | **21.86** |
| Above 8 – 10 | 20 | 17 | 37 | 17.20 |
| Above 10 – 12 | 22 | 18 | 40 | 18.60 |
| TOTAL | **124** | 91 | 215 | 100.00 |

**Table 2: Pattern of involvement**

| | Number of cases | Percentage |
|---|---|---|
| Generalized | 16 | 7.44 |
| Localized | 199 | **92.55** |

**Table 3: Pattern of involvement**

| Anatomic site | Number of cases | Percentage |
|---|---|---|
| Cervical | 179 | **89.94** |
| Axillary | 13 | 6.53 |
| Inguinal | 7 | 3.51 |
| Total | 199 | 100.00 |

**Table 4: Related & associated clinical features {other than swelling}**

| S.N. | Clinical features | No. of patients |
|---|---|---|
| 1 | Swelling | 215 (100%) |
| 2 | Pain in the swelling | 27 |
| 3 | Cough | 74 |
| 4 | Cold | 33 |
| 5 | Fever | 141 |
| 6 | Loss of weight & appetite | 21 |
| 7 | Congested tonsils or pharynx | 17 |
| 8 | Ear discharge or otitis media | 19 |
| 9 | Known case of tuberculosis | 9 |
| 10 | Dental caries or teeth infection | 6 |
| 11 | Contact with tuberculosis | 7 |
| 12 | Scalp lesions | 12 |
| 13 | Rash over body/ Skin lesions | 3 |
| 14 | Known case of seizures | 8 |
| 15 | Sternal tenderness/bone pain | 1 |
| 16 | HIV positive cases | 2 |
| 17 | Only swelling | 27 |

**Table 5: Lab parameters in pediatric lymphadenopathy**

| S.N. | Positive Lab findings | | No of cases |
|---|---|---|---|
| 1 | Increased ESR | | 18 |
| 2 | Chest X ray s/o TB | | 4 |
| | X ray - Bronchopneumonia | | 3 |
| | X ray- Hilar Lymphadenopathy | | 3 |
| 3 | Leukocyte count | Increased - 18 | 26 |
| | | Decreased - 8 | |
| 4 | Mantoux test | Mantoux test | 8 |
| 5 | Culture in suppurative aspirate | Culture in suppurative aspirate | 17 |
| 6 | Ziehl- Neelsen stain AFB+ve | Ziehl- Neelsen stain AFB+ve | 5 |

Lab parameters in pediatric lymphadenopathy

- From the table, we can say that these lab investigations are not of much use in coming to a specific diagnosis .
- Culture sensitivity of the aspirate is advised in all cases of suppurative lymphadenitis not for diagnosis but for specific antibiotic therapy.
- So FNAC is advisable in all such cases to arrive to a certain diagnosis

**Table 6: Distribution of cytologic diagnosis**

| S.N. | Cytological diagnosis | No of cases | Percentage |
|---|---|---|---|
| 1 | Benign lymphadenopathy | | |
| | 1) Non-specific lymphadenitis (Reactive Hyperplasia) | **139** | **64.65%** |
| | 2) Acute suppurative lymphadenitis | 22 | 10.23% |
| | Tuberculous lymphadenitis | 45 | 20.93% |
| 2 | Lymphoma | | |
| | 1) Hodgkin lymphoma | 0 | 0.00% |
| | 2) Non-Hodgkin lymphoma | 1 | 0.46% |

| | | | |
|---|---|---|---|
| 3 | Leukemic lymphadenopathy | 4 | 1.86% |
| 4 | Inadequate for opinion/ unsatisfactory | 4 | 1.86% |
| | Total | 215 | 100% |

**Table 7: Correlating Cytologic & Histopathologic diagnosis (n = 65)**

| FNAC diagnosis | No of cases | Histopathological diagnosis | | | | | |
|---|---|---|---|---|---|---|---|
| | | Reactive | DAL | Tuberculous | Hodgkin lymphoma | Non Hodgkin Lymphoma | Accuracy |
| Reactive | 40 | 26 | 8 | 5 | 1 | - | 85% |
| Tuberculous | 16 | - | | 16 | 1 | - | 100% |
| Suppurative | 0 | - | | - | - | - | - |
| Lymphoma/ Leukemia | 5 | - | | - | - | 5 | 100% |
| Inadequate | 4 | 4 | | - | - | - | - |
| Total | 65 | 38 | | 21 | 1 | 5 | |

**Table 8: Comparison of etiologic diagnosis with other studies**

| S.N. | | Present study (2008) | Lake &Oski (1978) | Reddy P (2002) |
|---|---|---|---|---|
| 1 | Nonspecific lymphadenitis | 137 (63.7%) | 41 (54.6%) | 63 (63%) |
| 2 | Tubercular lymphadenitis | 50 (23.25%) | 21 (28%) | 31 (31%) |
| 3 | Acute suppurative lymphadenitis | 22 (10.23%) | - | 18(18%) |
| 4 | Non Hodgkin lymphoma | 5 (2.32%) | 3 (4%) | 2 (2%) |
| 5 | Hodgkin lymphoma | 1 (0.46%) | 9 (12%) | 1 (1%) |

## Summary & Conclusions

- Age group most commonly affected was 6-8 years with male predominance
- Localized lymphadenopathy was most common with cervical group of nodes being most commonly affected.
- Etiologic spectrum in pediatric lymphadenopathy in our area was: non – specific lymphadenitis (m/c), TB, suppurative, lymphoma and drug related lymphadenopathy whose association with lymphoma while not proven is not ruled out also.
- We found that generalized lymphadenopathy does not always mean a malignant process. So in generalized lymphadenopathy infective etiology must be ruled out before subjecting the patient to aggressive& costly investigations.
- Overall diagnostic accuracy of FNAC was 90.16%, being 100% for TB & lymphoma.
- It is important to keep follow-up of patients showing a reactive smear but not responding to therapy.
- FNAC as a diagnostic modality is almost as sensitive & specific as excisional biopsy with an adequate smear and examination by expert eyes.
- It can obviate the need for biopsy in majority of the cases minimizing the need for hospitalization, trauma and scars of surgery.

## Recommendation

- Discussion between cytologist & clinician is of immense importance.
- FNAC should be the initial step in the evaluation of lymphadenopathy in children.

- It is relatively non–invasive, safe & rapid diagnostic tool with high sensitivity and still cheap.
- In our view indications for biopsy are:
  - Smear showing non-specific picture but not responding to treatment
  - Lab features & parameters are not comparable to cytology
  - Progressive L N enlargement.

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