ORIGINAL ARTICLE

STUDY OF FINE NEEDLE ASPIRATION CYTOLOGY IN LYMPHADENOPATHY IN CHILDREN

Siddaling Changty¹, Mujumdar V. G², Sangameshwar N. C³, Uzma Tanveer⁴, Shivakumar G. S⁵, Mohd. Muzzammil⁶

HOW TO CITE THIS ARTICLE:

Siddaling Changty, Mujumdar V. G, Sangameshwar N. C, Uzma Tanveer, Shivakumar G. S, Mohd. Muzzammil. "Study of Fine Needle Aspiration Cytology in Lymphadenopathy in Children". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 14, February 16; Page: 2371-2375, DOI: 10.14260/jemds/2015/340

ABSTRACT: BACKGROUND: Lymphadenopathy is one of the commonest clinical presentation among the children (0-14years) having several etiologies and can pose a diagnostic dilemma to a pediatrician. FNAC is an important and rapid diagnostic modality for the etiologic workup in significant lymphadenopathy. **AIMS AND OBJECTIVES:** To know the incidence of various causes of lymphadenopathy in children. To know the advantages of FNAC over surgical biopsy. **MATERIALS AND METHODS:** The present study comprises of FNAC of lymph nodes of 120 cases in pediatric age between 0-14years with lymphadenopathy, who attended the OPD and those admitted in Khaja Banda Nawaz Teaching and General Hospital, Gulbarga during the period between JAN 2013 to DEC 2014. Detailed history and thorough clinical examination and routine examination was done on approach of the patient. FNAC was carried out in all cases on significant lymph nodes and aspirated materials was smeared and sent to laboratory various stains were used for staining cytological smears. **RESULTS:** Over all lymphadenopathy was common in (5-10years) age (35%), higher in males (54.1%) than females. Anatomically cervical lymphadenopathy was commonest (90%). Most common cause was found to be TB lymphadenitis. **CONCLUSION:** FNAC of lymph node in children is simple rapid diagnostic method with minimum discomfort to the patient and readily accepted by them.

KEYWORDS: FNAC, significant lymphadenopathy, pediatric age (0-14 years).

KEYMESSAGE: FNAC is very simple procedure which can be carried out with ease in children. It reduces the necessity to perform excision biopsy in many cases, thus saving children from surgical complications.

INTRODUCTION: A typical pediatric OPD commonly confronts patients with lymphadenopathy. It is major source of concern among the parents. The purpose of this study was to evaluate the diagnostic efficacy of FNAC on lymphadenopathy in pediatric age group and study the spectrum of diagnosis in patients presenting with significant lymphadenopathy in children. Today lymph nodes are one of the most frequently sampled tissues. FNAC is a diagnostic method in which cells are extracted from a tumor or a nodule using a syringe and a fine needle.^{1,2} It is simple, speedy, safe, cost effective and accurate technique being used worldwide.^{3,4} Aspiration biopsy of lymph node is a currently used method in the diagnosis of clinically abnormal lymph nodes, if handled properly can provide excellent cytological details with little inconvenience to the patient.

Enlarged lymph nodes, most of the time represents normal age related physiologic changes or transient responses to benign local or generalized infections originating from URT or Skin. However, it may have several etiologies ranging from an inflame process to a malignant condition thus posing diagnostic dilemma to a definitive diagnosis in order to administer proper treatment.

ORIGINAL ARTICLE

OBJECTIVES: To know the incidence of various causes of lymphadenopathy in children.

To know the accuracy of FNAC in diagnosis of lymphadenopathy.

To know the advantages of FNAC over surgical biopsy.

To know the rate of success in obtaining sufficient material from FNAC of lymphadenopathy for interpretation.

MATERIALS AND METHODS: The present study comprises of FNAC of lymph nodes of 120 cases in pediatric age group between 0-14yrs with lymphadenopathy, who attended the OPD and those admitted in Khaja Banda Nawaz Teaching and General Hospital, Gulbarga during the period between JAN 2013 to DEC 2014. On approach, detailed history, thorough examination and routine investigation were done. FNAC was carried out in all cases on significant lymph nodes using 22 gauge needle and disposal 10ml plastic surgery. The aspirated material was smeared on 2-6 slides and air dried. All the material was sent to lab with in 20min. Fixed smears were stained with MAY-Grunwald Giemsa stain.

The procedure was acellular or inconclusive. In addition to FNAC, surgical biopsy was done in 54 cases for a correlative study between the diagnosis by FNAC and Biopsy.

The following staining procedure was used for staining the cytological smears:

May-Grunwald Giemsa stain (Dacie and Lewis, 1994).⁵

H&E stain (Frale W J1976).⁶

Papanicolaou stain.⁷

ZN method for acid fast bacilli.⁸

The stained slides were observed under microscope and reported accordingly.

OBSERVATIONS: The following observation has been made in the study:

1] AGE and SEX distribution of lymphadenopathy. Maximum no. of cases was in 5-10years 42 cases (35%).

Age in years	Male	Female	Total	%
0-1	06	04	10	8.3%
1-5	17	16	33	27.50
5-10	24	18	42	35.00
10-14	15	20	35	29.20
Total	62 (51.7%)	58 (48.3%)	120	100.0%

Table 1

ORIGINAL ARTICLE

2] Anatomical distribution of lymphadenopathy.

Anatomical	Unilateral	Bilateral	Total	Percentage
Cervical	85	23	108	90.00
Axillary	02	-	02	01.70
Inguinal	01	-	01	00.80
Generalized	-	09	09	07.50
Total	88	32	120	100.00

Table 2

The commonest anatomical site of lymphadenopathy is cervical region with (90%) (108 cases).

3] Cytological diagnosis of lymphadenopathy. The commonest cause of lymphadenopathy in children was tuberculosis.

Cytological diagnosis	No. of cases	Percentage
Tuberculosis	63	53.5
Non-specific reactive lymphadenitis	43	35.9
Hodgkin's lymphoma	03	2.5
Non-Hodgkin's lymphoma	02	1.7
Infectious mono nucleus	01	0.8
Toxoplasmosis	01	0.8
Histiocytosis	01	0.8
Suppurative lymphadenitis	04	3.4
Inconclusive	02	1.7
	120	100.00

Table 3

4] Surgical biopsy –FNAC correlation.

Histopathological Diagnosis biopsy	No. of cases by biopsy	Cytological diagnosis by FNAC	Accuracy (%)
Tuberculosis	39	38	97.4
Non-specific reactive lymphadenitis	08	07	87.5
Hodgkin's lymphoma	02	02	100.0
Non-Hodgkin's lymphoma	02	02	100.0
Infectious mono nucleus	01	01	100.0
Toxoplasmosis	01	01	100.0
Histiocytosis	01	01	100.0
Total	54	52	96.30

Table 4

The accuracy of FNAC is 97.4% in cases of TB, 87.5% in non- specific reactive lymphadenitis.

ORIGINAL ARTICLE

DISCUSSION: This study was carried out primarily to evaluate the accuracy and advantages. In the present study, the age incidence among 120 cases has shown the age group between 5-10years (35%) to be more common. Next common age to present with lymphadenopathy was 10-14years (29.2%). The least common age group with lymphadenopathy was 0-1years (8.3%). Evidence of lymphadenopathy was slightly higher in males (51.7%) than females. Study by Das Gupta et.al (1994) showed among 180 cases, 111(61.7%) were female and 69(38.3%) were male, thus showing a female preponderance. Anatomical

Distribution of lymphadenopathy in the present study showed cervical region to be commonest presentation 108 cases (90%). Next common type of presentation was Gen.lymph (7.5%) 9 cases. The study of Das Gupta et.al showed common distribution of lymphadenopathy was unilateral (50%) in comparison to bilateral (40%)¹⁰. This study correlates with the present study with unilateral distribution (73.3%) more than bilateral distribution (19.2%).

In the present study the diagnosis of tuberculosis was made in 39 cases by biopsy. Of these 38 were diagnosed by FNAC. One false negative report was present; one case of tuberculosis was falsely reported as non-specific reactive lymphadenitis by FNAC. The diagnostic accuracy of FNAC was 97.4% in the present study. In the study by Das Gupta et.al the diagnosis of tuberculosis was made in 114 cases by FNAC when these cases were subjected for biopsy they were diagnosed to be tubercular lymphadenitis. Accuracy by FNAC was 84.4% hence the diagnostic accuracy by FNAC for tubercular lymphadenitis is high. In the study by Das Gupta et.al 27 cases were of reactive etiology. Following biopsy, 15 cases showed the same changes.

In the present study, 7 cases were diagnosed as reactive lymphadenitis, 6 cases were diagnosed as reactive by biopsy, and 1 case was diagnosed as TB lymphadenitis. Accuracy of FNAC in present study for reactive lymph nodes was 87.5%. In the present study, 3 cases were diagnosed as Hodgkin's lymphoma. Biopsy revealed 2 cases as Hodgkin's lymphoma and one as reactive. Hence there was one false positive case, 2 cases were diagnosed as Non-Hodgkin's lymphoma and subsequently confirmed by biopsy. There was a case of IMN, Toxoplasmosis and Histocytosis. All were subsequently confirmed by biopsy. Hence the study showed a good correlation between FNAC and surgical biopsy and thus can be taken as a valuable procedure for diagnosis of lymphadenopathy.

CONCLUSION: FNAC of lymph node in children is a simple rapid diagnostic, reliable, easy and economical technique with a high diagnostic accuracy. It can be done as an outpatient investigation and is cost effective in comparison to surgical biopsy. It reduces the necessity to perform excision biopsy in many cases, thus saving children from surgical complications. The limitation of FNAC is that, only positive results have clinical significance. FNAC has a high diagnostic accuracy, minimal false negative and false positive results with relatively less complications. Thus, FNAC can be recommended as a first line of investigation in the diagnosis of lymphadenopathy in the pediatric age group.

REFERENCES:

1. Joseph, A, Linsk, Sixteen Frazen M.D, FNAC for Clinician. 1st edn, JB Lippin Cott Company. Philadelphia: 1986.1-15.
2. Mohd. Aktar, et.al: Technical methods, J.Clin. Pathol 33, 1980, 1214-1216.

ORIGINAL ARTICLE

3. Kamns KY D.B, Aspiration Biopsy, In: context of new Medicare fiscal policy. Acta CY tol 1984, 38: 333-336.
4. Sharon Mair, Fiano Dunn bar, piet J Becker, Win suction necessary? acta cytological; 33(6)1988, 809-813.
5. Sir. John V Dacie, Lewis S M, Practical Hematology 8th edt, ELBS, with Churchill levingstone 1994.
6. Frable WJ: Thin needle aspiration biopsy, a personal experience with 469 cases: Amr J Clin Path: 1976; 65 (2):168-02.
7. Leopold, G, Koss Diagnostic cytopathoogy is its histopathological basis 3rd edn J B Lippincott company Philadelphia: 1977.
8. CFA culling, Rt, Allison, WT Barr:cellular pathology technique 4th edn Butterwoths.
9. Anjali Das Gupta et.al, Fine needle aspiration cytology of cervical lymphadenopathy with special preference to TB JIMA 1994 Feb 92-2.
10. Anjali Das Gupta et.al, Fine needle aspiration cytology of cervical lymphadenopathy with special preference to TB JIMA 1994 Feb 92-2.

AUTHORS:

1. Siddaling Changty
2. Mujumdar V. G.
3. Sangameshwar N. C.
4. Uzma Tanveer
5. Shivakumar G. S.
6. Mohd. Muzzammil

PARTICULARS OF CONTRIBUTORS:

1. Professor and HOD, Department of Pediatrics, KBNIMS, Gulbarga.
2. Associate Professor, Department of Pediatrics, KBNIMS, Gulbarga.
3. Assistant Professor, Department of Pediatrics, KBNIMS, Gulbarga.
4. Junior Resident, Department of Pediatrics, KBNIMS, Gulbarga.

FINANCIAL OR OTHER

COMPETING INTERESTS: None

5. Junior Resident, Department of Pediatrics, KBNIMS, Gulbarga.
6. Junior Resident, Department of Pediatrics, KBNIMS, Gulbarga.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Mujumdar V. G,
Plot #34, N. G. O. S,
Housing Colony, Jewargi Road,
Gulbarga.
E-mail: drmujumdarvg@gmail.com

Date of Submission: 24/01/2015.
Date of Peer Review: 27/01/2015.
Date of Acceptance: 09/02/2015.
Date of Publishing: 14/02/2015.