

Role of Fine Needle Aspiration Cytology of Cervical Lymphnode in Paediatric Age Group

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Abstract :

Introduction: Lymphadenopathy is a common physical finding in childhood. Unexplained lymphadenopathy in children is a major source of parental anxiety. This study was undertaken to evaluate the utility of Fine Needle Aspiration Cytology as a rapid diagnostic tool for cervical lymphadenopathy in paediatric age group.

Methodology: Total 260 patients attending OPD at Dr.Shankarrao Chavan Govt Medical College, Nanded from January 2010 to December 2012 were studied.

Summary of results: The age group ranged from 0-18 years. The commonest age group affected was 7-9 years. Male to female ratio was 1.1:1. Posterior triangle was the commonest site of lymphadenopathy 130 (50%) cases. On cytology, 122 (46.93%) cases were diagnosed as tuberculous lymphadenitis, 69 (26.54%) cases diagnosed as chronic non-specific lymphadenitis, 43 (16.54%) cases diagnosed as reactive lymphadenitis, 10 (3.85%) cases diagnosed as acute lymphadenitis, 12 (4.62) cases diagnosed as N.H.L, 02 (0.76%) cases diagnosed as hodgkin's lymphoma, 01 (0.38%) cases diagnosed as suspicious for malignancy. Histopathological examination was possible in only 40 cases. The overall sensitivity observed was 100%, specificity 97.05% and accuracy was 97.56%.

Conclusion: FNAC is a safe, simple, reliable, reproducible and cost effective procedure in the diagnosis of paediatric lymphadenopathy and is free from limitations of surgical biopsy.

Keywords: FNAC, tuberculous, N.H.L, hodgkin's lymphoma, malignancy

I. Introduction

Diagnostic cytopathology is the art and the science of the interpretation of cells from human bodies that either exfoliates freely from the epithelial surface or is removed from various tissue sources by various clinical procedure. Unexplained lymphadenopathy in children is a major sources of parental anxiety. While majority of cases are benign, some are associated with life threatening disease such as malignancy.

II. Aim And Objectives

To study aspiration cytology smear pattern in cervical lymphadenopathy in paediatric age group. To establish accuracy of the FNAC of cervical lymphadenopathy in paediatric age group and to correlate it with histopathological diagnosis in cases where surgical resection was done Also to evaluate and establish technique of FNAC as a routine procedure for cervical lymphadenopathy in paediatric age group at this institution

III. Materials And Method

The prospective study was carried out in the Department of Pathology, GMC and hospital, Nanded. Time period: 1/1/2010 to 31/12/2012. The patients were evaluated as per preformed proforma. Where required investigations were done and vaccines history was obtained

Criteria for inclusion of cases: Age, history of cervical lymphadenopathy, size more than 1 cm. and cervical lymphadenopathy not responding to antibiotics.

Aspiration technique: Local examination was done and the best accessible or the most appropriate lymphnode was selected. The site is sterilised and a 22 gauge needle is used for the aspiration technique.

Fixative and staining: The smears are fixed in ethyl alcohol (95%) and stained with Papanicolaou stain, hematoxylin and eosin, Giemsa stain. Smears which showed granuloma formation or were suspicious for tuberculosis were stained with Ziehl-Neelsen stains.

Cytological smears were classified as Inadequate, Benign, Suspicious for malignancy, Positive for malignancy

IV. OBSERVATIONS

The present study comprised of 260 cases attending out patient department with significant cervical lymphnode enlargement and were subjected to FNAC.

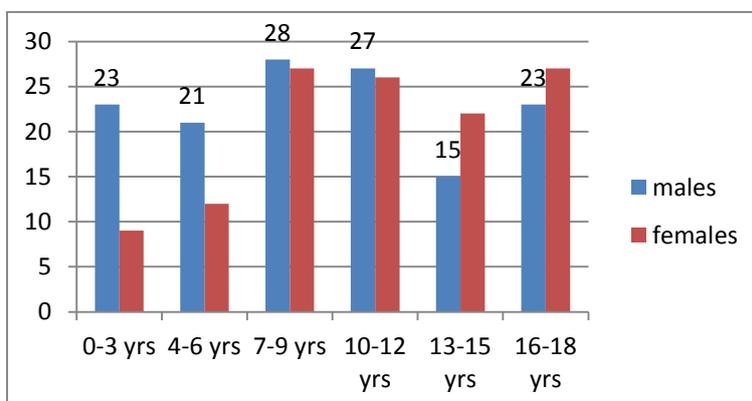


Fig.1: Age and sex wise distribution of cases

The above bar diagram shows the age in groups and the proportion of male and female patients. the most common age group affected was 7-9 years and the male to female ratio was found to be 1.1:1.

Table.1: site wise distribution of cases

Location of lymphnode swelling	unilateral		Bilateral	Midline
	Right	Left		
Anterior triangle neck	11(4.23%)	12(4.62%)	6(2.3%)	-
Posterior triangle neck	54(20.77%)	34(13.08%)	42(16.15%)	-
Submandibular region	27(10.39%)	14(5.39%)	12(4.62%)	-
Supraclavicular region	03(1.16%)	04(1.54%)	01(0.38%)	-
Post auricular region	13(5%)	07(2.69%)	02(0.76%)	-
Pre auricular region	-	01(0.38%)	-	-
Occipital region	-	-	-	01(0.38%)
Submental region	-	-	-	16(6.15%)

The above table shows that the most common site of lymphnode enlargement was posterior group.

Table.2: Histopathological diagnosis of 40 cases

Histopathological diagnosis	No. of cases	Percentage
Reactive lymphadenitis	10	25.00
Chronic non-specific lymphadenitis	12	30.00
Tuberculous lymphadenitis	11	27.50
Hodgkin's lymphoma	01	5.00
Non-Hodgkin's lymphoma	05	12.50
Total	40	100

On Histopathology of the 40 cases that followed up, the commonest lesion was found to be chronic non-specific lymphadenopathy comprising 30% of the cases.

Table.3: cytological and histopathological correlation

Cytological diagnosis	No. of biopsy	Histopathological diagnosis	correlated	
			Yes	No
Reactive lymphadenitis	10/43	Reactive lymphadenitis	10	-
Chronic non-specific lymphadenitis	11/69	Chronic non-specific lymphadenitis	11	-
Tuberculous lymphadenitis	11/122	Tuberculous lymphadenitis	11	-
Hodgkin's lymphoma	02/02	Hodgkin's lymphoma	02	-
Non-Hodgkin's lymphoma	05/12	Non-Hodgkin's lymphoma	02	-
Suspicious for malignancy	01/01	Suspicious for malignancy	-	01

The above table shows the correlation between the Cytology and Histopathology. The maximum cases that were followed up showed good correlation. The only single case where the diagnosis of cytology did not go hand in hand with the histopathology was the one that was suspected for malignancy.

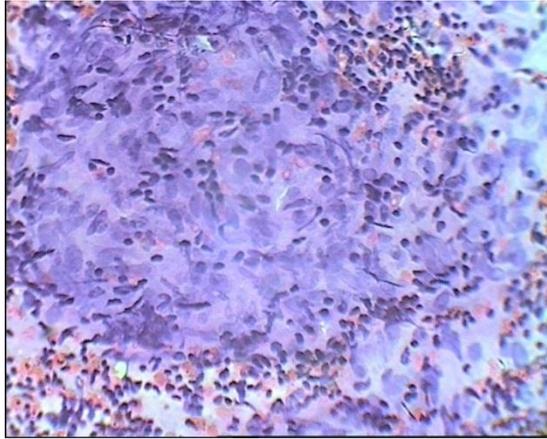


Fig.2: Tuberculous lymphadenitis (Pap stain 400x)

Tuberculous lymphadenitis shows epithelioid granuloma comprised of epithelioid cells and lymphocytes.

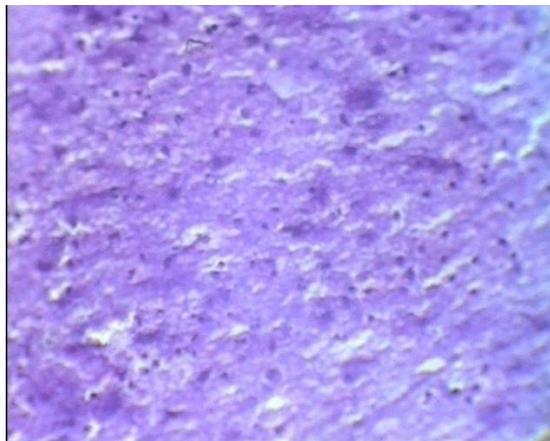


Fig.3: Tuberculous lymphadenitis (Pap stain 400x)

Tuberculous lymphadenitis showing granular pink caseous necrotic material

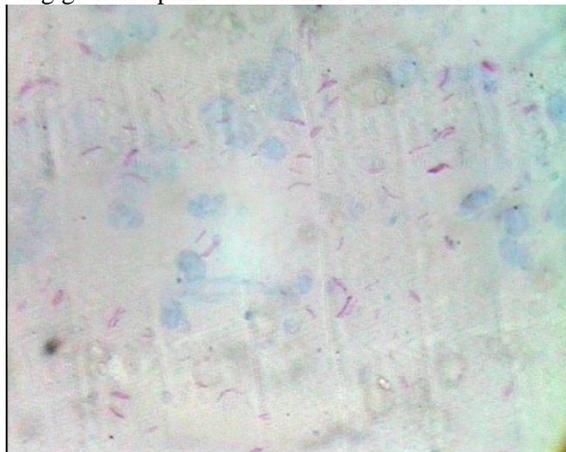


Fig.4: Tuberculous lymphadenitis (Ziehl Neelsen stain 1000x)

Tuberculous lymphadenitis showing pink coloured acid fast bacilli

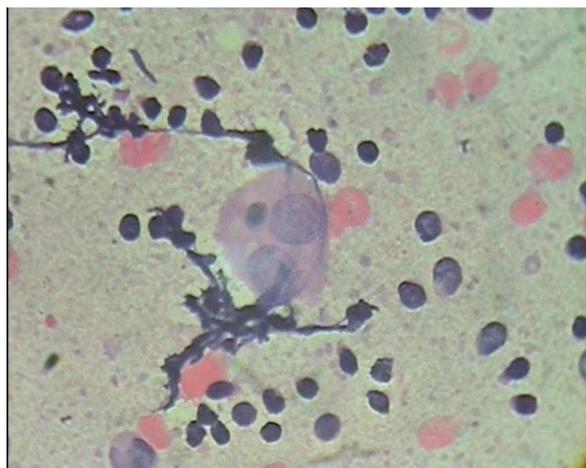


Fig.5: Hodgkins lymphoma (Pap stain 400x)

Hodgkins lymphoma showing lymphocytes and binucleated Reed-Sternberg cells (R-S)

V. Discussion

Out of 260 cases studied the commonest age group affected was 7-9 years which is comparable to Handa U et al in 2003 [1]. Male to female ratio studied by Mishra S.D. et al (1972) and Leon Van de School et al (2001) was 1.2:1 which is comparable to the present study[2,3]. Commonest site of lymphnode enlargement was posterior triangle of neck in 50% of the cases which is comparable to that studied by Knight P.J et al in 1982 (47.25%)[4]. 122 cases (46.93%) were found to be tuberculous lymphadenitis which are in accordance with the study conducted by Narang R.K. et al in 1990 (50%)[5]. 69 (26.54%) cases of chronic non-specific lymphadenitis were found in the present study which were in comparison with the study conducted by Singh A. et al in 1986 (21%) and Mondal et al in 1989 (22.98%)[6,7]. Reactive lymphadenitis was seen in 43 (16.54%) of cases which is in accordance with Ragesh K.P et al (20%)[8]. Acute lymphadenitis was seen in 10 (3.85%) cases which are comparable to that studied by Mondal et al in 1989 (4.05%)[7]. 12 (4.62%) cases of non hodgkin's lymphoma were seen in present study which is comparable to Singh A et al 1986 (0.58%)[6]. 02 (0.76%) cases of Hodgkin's lymphoma seen were comparable to the study conducted by Handa U. et al in 2003 (0.58%)[1]. Also seen were 01 (0.38) case of acute lymphocytic leukemia and suspicious for malignancy each.

VI. Summary And Conclusion

The present study shows that the commonest age group affected was 7-9 years. Male female ratio was 1.1:1. Posterior triangle of the neck was the most common site of cervical lymphadenopathy in 130 (50%) cases. Unilateral cervical lymphadenopathy was more common [197(75.77%) cases] than the bilateral cervical lymphadenopathy [63(24.23%) cases]. The most common clinical symptom was swelling in the neck followed by fever in 133 (51.15%) cases. Adequate material was successfully aspirated in the first attempt in 245 (94.23%) cases. Grayish white with hemorrhagic material was the most common type of aspirate in 136(52.31%) cases. On cytology the most common diagnosis was tuberculous lymphadenitis [122(46.93) cases], followed by chronic non-specific lymphadenitis [69(26.54%) cases]. Histopathological examination was done in 40 cases of which chronic non-specific lymphadenitis was the most common diagnosis [12(30%) cases] followed by tuberculous lymphadenitis in 11 (27.5%) cases. Out of the 40 cases correlated.

Cytologically and histologically 39 cases were correlated correctly and 1 case was considered false positive. Overall sensitivity observed was 100%, specificity was 97.05%, and accuracy was 97.56%. the diagnostic accuracy of FNAC for tuberculous lymphadenitis was 100%. Overall acid fast bacilli positivity was seen in 40(32.79%) cases.

Therefore with increasing cost of medical facilities any technique which:

- Speeds up the process of diagnosis
- Limits the physical and psychological trauma to the patient and
- Saves the expenditure of hospitalization

Will be of tremendous value.

Thus FNAC can be recommended as a first line of investigation in the diagnosis of cervical lymphadenopathy in paediatric age group

References

- [1] Handa U., Mohan H. et al Role of FNAC in evaluation of Paediatric Lymphadenopathy. *Cytopathology*, 2003; 14:66-69
- [2] Mishra S.D., Garg B.K. et al Cervical lymphadenopathy in children : A study of 137 cases. *Indian paediatrics*, 1972;9(12):812- 815.
- [3] Leon van de School, Aronson D.C. et al The role of in children with persistent and suspicious lymphadenopathy. *Journal of Paediatric surgery*, 2001; 36(1):7-11
- [4] Knight P.J., Mulne A.F. et al when is lymphnode biopsy indicated in children with enlarged peripheral nodes? *Paediatrics*,1982;69(4):391-396
- [5] Narang R.K., Pradhan S. et al Place of FNAC in diagnosis of lymphadenopathy. *Indian J. Tub* 1990;37:29-31
- [6] Singh A., Singh M. et al, Role of FNAC in diagnosis of lymphadenopathy. *Indian Journal of Surgery*, 1986; 133-137
- [7] Mondal, Mukherjee D.et al FNAB cytology in diagnosis of cervical lymphadenopathies. *Indian Med.Association*, 1989;87(12P):281-283
- [8] Ragesh K.P., Chana R.S., et al, Head and Neck masses in children: A clinicopathological study. *Indian jour. Of Otolaryngology*, 2002;54(4):268-271