IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 12 Ver. XI (Dec. 2017), PP 51-55
www.iosrjournals.org

Role of Fine Needle Aspiration Cytology in Children With Significant Cervical Lymphadenopathy - A Retrospective Study Evaluating Its Diagnostic Role & Efficacy.

*[1]M Koteswari. [2]P Geetha Vani. [2]V Swetha
[1](Associate Professor, Department of Pathology)
[2] (Assistant Professor, Department of Pathology)
[3] (Senior Resident, Department of Pathology)
**Corresponding author: M Koteswari*

Abstract:
Aim: *The present study is evaluate and establish the technique of F.N.A.C as a rapid diagnostic tool for cervical lymphadenopathy in paediatric age group and to study the aspiration cytology smear pattern in cervical lymphadenopathy in children, correlating with histopathological examination where ever necessary. [where surgical resection was done].*
Material And Methods: *This is a hospital based retrospective study conducted over a period of 2 years from January 2015 to December 2016. Total 231 patients attending to O P D of the departments of paediatrics , surgery, medicine, pulmonology and ENT, who were advised F.N.A.C for mass lesions in cervical region are included in the study.*
Results: *Significant cervical lymphadenopathy is found to be common in 7-9 years (29%), followed by 4-6 years (28%) and 19-12 years (28%) respectively.*
Conclusions: *F.N.A.C is more rapid, inexpensive,safe procedure. It can be recommended as a first line of investigation for the diagnosis of cervical lymphadenopathy in children, and to differentiate between inflammatory and neoplastic lesion.*
Keywords*: F.N.A.C, Reactive lymphadenitis, Granulomatous Tuberculosis, Lymphoproliferative disorder.*

Date of Submission: 18-12-2017 Date of acceptance: 28-12-2017

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 procedures. Unexplained lymphadenopathy in children is a major sources of parental anxiety .[1] Infections are the commonest etiology for significant lymphadenopathy. Lymphadenopathy may be due to systemic viral infections.Lymphnodes are the filters along the lymphatic system. Their job is to filter out and trap bacteria,viruses ,cancer cells and other unwanted substances to make sure that they are safely eliminated from the body. Palpable nodes in the cervical region are found in about 80-90% of children.Lymphnodes in children may be palpated as early as in the neonatal period.Lymphadenopathy is defined as an abnormality in the size or character of lymphnodes. A lymphnode is considered as abnormally enlarged if it measures more than 10 mm in its longest diameter in the cervical region. [2]. Palpable supraclavicular nodes are always considered abnormal .Majority of these are due to benign self-limited disease process, because self limited viral or bacterial infections are the most common causes . In malignancies like lymphoma and leukemia, cervical nodes may be enlarged and may be the initial presentation

F.N.A.C has been an initial diagnostic tool in evaluating lesions in adult patients with good patient acceptance and low morbidity. However, F.N.A.C has received limited acceptance in pediatric cases may be because of a desire for a diagnostic technique of low morbidity but high accuracy. .N.A.C is a rapid and simple technique for diagnosing mass lesions. It is popular because it is minimally invasive, relatively safe and no sedation is required. Advanced ancillary techniques like cell block preparation, immunochemistry, cytogenetic studies, Electron microscopy and Flow cytometry can be performed with the aspirated material. F.N.A.C is a helpful tool, for clinicians and surgeons, in deciding the further line of treatment and management. Cost of diagnosis is decreased by F.N.A.C and the process of diagnosis is accelerated. Selection,guidance and planning the modality of treatment is done on rapid basis.[3]

II. Material And Methods

The present study is retrospective study, carried out in the Department of pathology, at a tertiary care centre from January 2015 to December 2016. A brief clinical history and consent was taken from the parents of the children. A thorough physical examination was done. Complete blood picture was done, wherever necessary. Vaccine history was also obtained. F.N.A.C was done for all the patients in the study group after selecting most prominent node in patients.

2.1Inclusion criteria

1. Patients between the age group of 1 month to12 years.
2. Patients with cervical lymphadenopathy with lymphnode size of > 1cm in cervical region.
3. History of cervical lymphadenopathy and not responding to antibiotics.

2.2 Exclusion criteria

1. Totally unsupportive patients.
2. Age >12 years of age.
3. Unpalpablelesion.
4. Lesions of areas other than cervical region.

2.3Aspiration technique: local examination was done. The best accessible and the most appropriate lymphnode was selected. The site is sterilized and aspirated the material by using 22 gauge needle [21-24] attached to 10 ml syringe.

2.4 Fixation and Staining : The smears are fixed in ethyl alcohol (95%) and stained with Papaniculaou stain, hematoxylin and eosin and air dried smears are stained with May Grunwald 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 (reactive lymphadenitis and granulomatou lymphadenitis) and suspicious of malignancy (lymphoproliferative).

Neck swelling was the presenting symptom in 90% of children. Fever and cough were the presenting symptoms in 89.5% and 52% of children respectively. History of loss of weight and loss of appetite were seen in 31% of childrenHistory of sore throat was present in 19% of children. Swelling was painless in majority of cases (93%) and pain in swelling was seen in 7%. In60% of children, there were more than one presenting symptoms. History of ear discharge was present in 8% of children. History of contact with a case of tuberculosis was present in (6%).

Image 1: Smear shows rich cellularity,focal aggregates of epitheloid cells , plenty of lymphocytes, histiocytes And Foci Of Necrotic Debry.(H&E,X400)

Granulomatous Lymphadenitis

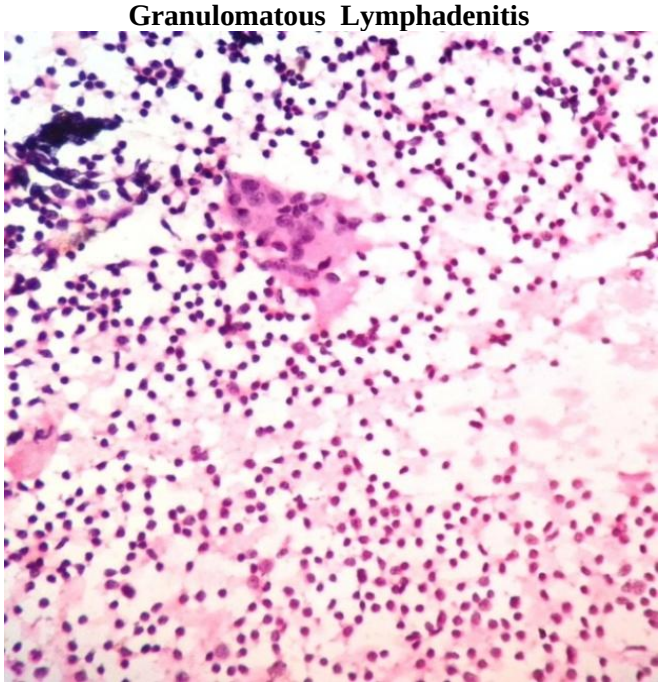

Image 2 : Smear shows lymphoid series of cells admixed with tangible body macrophages ,follicular center cells against a haemorrhagic background.(Giemsa,X400)

Reactive Lymphadenitis

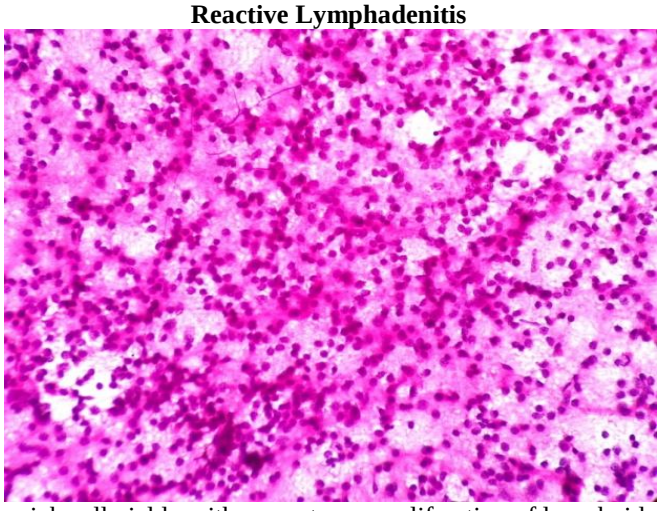

Image 3 : Smear shows rich cell yield , with monotonus proliferation of lymphoid series –small and large lymphocytes, plasma cells. (H&E,X400).

Lymphoproliferatie Disorder

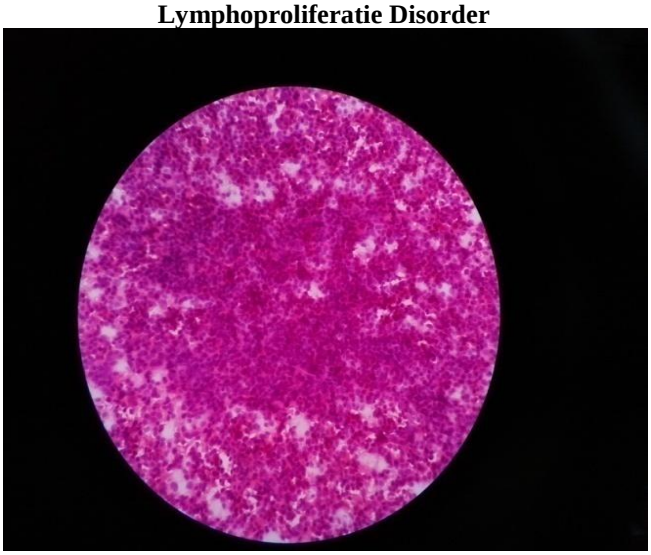

Image 4: Smear shows lymphocytes, eosinophils, neutrophils and classical Reed –Sternberg cells (H & E , X 400)

Hodgkins Lyphoma.

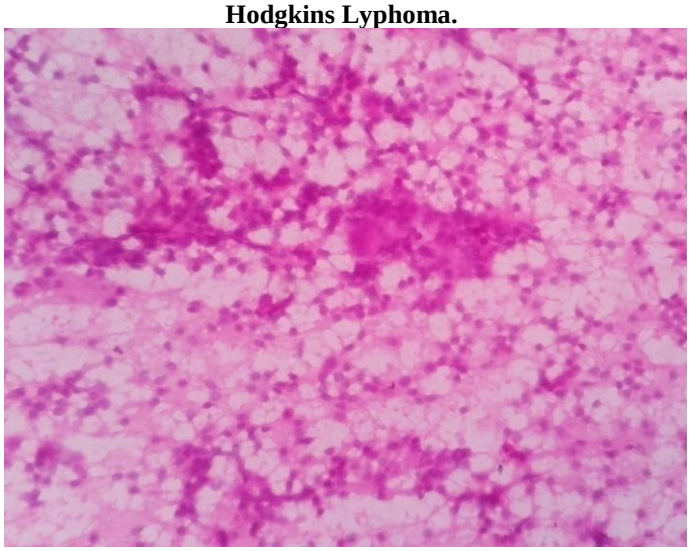

Table 1: Site wise distribution of cases.

Site	No of cases	% cases
Anterior triangle	91	39
Posterior triangle	47	20
Sub mandibular	22	9.5
Supra clavicular	8	3.5
Post auricular	45	19.5
Pre auricular	3	1.3
Occipital	4	1.7
Sub mental	11	4.8
Total	231	100

Table 2:

Location of lymphnode swelling	**Unilateral**		**Bilateral**	**Midline**
	Right	**left**		
Anterior triangle	**39 (16.9%)**	**23 (9.9%)**	**29 (12.6%)**	
Posterior triangle	**19 (8.2%)**	**18 (7.3%)**	**10 (4.3%)**	
Sub mandibular	**11 (4.8%)**	**8 (3.5%)**	**3 (1.3%)**	
Supra clavicular	**3 (1.3%)**	**4 (1.7%)**	**1 (0.4%)**	
Post auricular	**19 (8.2%)**	**15 (6.5%)**	**11 (4.8%)**	
Pre auricular	**2 (0.9%)**	**1 (0.4%)**	-	
Occipital				**4 (1.7%)**
Sub mental				**11 (4.8%)**

Table 3: Cytological diagnosis.

Cytological diagnosis	**No. of cases**	**Percentage**
Granulomatous Lymphadenitis	91	39%
Reactive lymphadentis	82	36%
Chronic non-specific Lymphadenitis	16	7%
Acute suppurative lesion	11	4.8%
Lymphoproliferative lesion	8	3.5%
BCG adenitis	1	0.4%
Unsatisfactory samples	22	9.5%
TOTAL	231	100%

Table 4 :

Age	Total no of children	Percentage of children	No. of male children	% of male children	No. of female children	% of female children	Female: male ratio
0-3 years	33	14%	15	14%	18	15%	1:1.07
4-6 years	65	28	33	31	32	26	1:1.04
7-9 years	68	29	30	28	38	31	1.3:1
10-12 years	65	28	30	28	35	28	1.2:1
Total	231	100	108	47	123	53	1.2:1

III. Discussion

In the present study, out of 231 cases unsatisfactory smears are 22 cases. Rest of the 209 cases are satisfactory for evaluation.Cervical Lyphadenopathy in children is mostly benign in nature. Only a few cases are malignant. F.N.A.C has got limited acceptance in pediatric population as compared to adults [4,5] In the present study, majority of the children are presenting in the age group of 7-9 years, probably due to increase in exposure to surrounding environment.[6]

Dr.Minal panchal studies also noted the same [1], Reddy , MP et al and B.Deeva Kumar [2] noted majority of the cases in 4-8 years group, [7] but Knight et al [8] emphasized in one of the largest studies relating,age to lymphadenopathy that, age is not important in predicting the incidence of significant lymphadenopathy.In the present study,there is female preponderance.[F:M=1.2:1]. But there is no such predilection of sex in studby Mishra S D et al. [9] . Male to female ratio studied by Mishra S D et al (1972) and Leon van de School et al (2001) was 1.2:1 [9,10] . In the present study predominant symptom was swelling in neck followed by fever and cough which is correlated with observation of Reddy. MP et al [7] and B. Deeva Kumar [2] . In the present studypredominant site was upper anterior cervical lymphnodes in accordance with their study of Knight et al [8] and Reddy et al [7] . However B.Deeva Kumar, observed the predominant sites included both anterior and posterior lymphnodes.[6,7].In the present study, the commonest cytopathological finding was granulomatous lymphadenitis in 39% followed by reactive lymphadenitis in 36%, chronic non-specific lymphadenitis in 7%,acute suppurative lesion 4.8%,lymphoproliferative lesion 3.5% and BCG adenitis

0.4%. In the present study, out of 231 cases, 91 cases (39%) were found to be granulomatous lymphadenitis, which are in accordance with the study conducted by Narang R.K.et al in 1990 (50%).[12]. Rapkiewicz A, study generated the similar finding. Paediatric lesions varies from country to country and region to region.[13].

Dr.B.Deeva Kumar study, the commonest cytopathological finding was reactive lymphadenitis 74% followed by granulomatous and suppurative lesion respectively. [2]. Lake et al and Reddy.M P et al noted the similar findings.[7,11].

IV. Conclusion

F.N.A.C is a safe, simple,reliable and cost effective procedure, speeds up the process of diagnosis,saves the expenditure of hospitalization,limits the physical and psychological trauma to the patient.F.N.A.C can be recommended as a first line of investigation in the diagnosis of cervical lymphadenopathy in children. It can differentiate well between inflammatory and neoplastic lesions.

V. Results

F.N.A.C was done in all 231 cases. The material was adequate for reporting in 209 cases(90%) of cases and in other 22 cases (9.5%), it was inadequate.The present study comprised 231 cases with significant cervical lymphnode enlargement and were subjected to N.A.C. Out of these 108 children are males (47%) and 123 children are females (53%). Significant cervical lymphadenopathy is common in 7-9 years (29%),followed by 4-6 years (28%) and 10-12 years (28%) respectively (Table- Anterior triangle neck is most commonly affected group of lymphnodes 91 cases [39%] followed by posterior triangle neck 47 cases [20%].Post auricular 45 cases [19.5%] and submandibular 22 cases [9.5%].[Table-1&2]. In majority of the cases 91/231 (39%) cytology showed granulomatous tuberculous lymphadenitis. Cytological features of reactive lymphadenitis were seen in 82/231 cases (36%), chronic non-specific lymphadenitis 16/231 cases (7%). In 11/231 cases,purulent material was aspirated and was reported as acute suppurative lesion (4.8%).8 cases (3.5%) reported as lymphoproliferative disorder[Image-3], out of which 1 case was Hodgkins Lymphoma [Image-4]. and 1 case (0.4%) reported as BCG adenitis. [Tablle The smears of granulomatous tuberculous lymphadenitis [Image-1]cases showed epitheloid cells in a background of necrosis,lymphocytes and presence of acid fast bacilli on ZiehlNeelsen[ZN]stain. the smears of reactive lymphadenitis showed a polymorphous population of lymphocytes and tingible body macrophages.[Image- 2]

References

[1]. Dr.Minal Panchal, Dr.Y.H.Chavan, Dr.S.A. Deshpande, Dr.S.V.Suvernakar, Role of Fine Needle Aspiration Cytology of Cervical Lymphnode in Paediatric Age Group .IOSR, 2014; vol 13: Issue 3 ver.v, pp 59--63.

[2]. B.Deeva Kumar, P. Anil Kiran. Clinicopathological study of Significant Cerv ical Lymphadenopathy in Children,Ijcmr;vol.4: issue 10 ,pp 2025--2027.

[3]. Mittra P, Bharti R, Pandey MK. Role of Fine Needle aspiration cytology in head and neck lesions of pediatric age group. Journal of clinical and Diagnostic research,2013;7:1055-1058.

[4]. SaasRS, Singh H K, Silverman FJ , Fine needle aspiration cytology, In; Orell SR, Sterett GF,editors.Pediatric Tumors. New Delhi; Churchill Livingstone Ltd.2012.pp445—67.

[5]. Jain M, Majumdar DD, Agarwal K, Basis AS, Choudhury M. FNAC as a diagnostic tool in pediatric head and neck lesions. Indian Pediaaaatr. 1999,36:921—3.

[6]. Annam V. Kulkarni MH, Puranik RB Clinicopathologic profile of significant cervical lymphadenopathy in children aged 1-12 years. Acta cytol. 2009;53:174—8 [Pub Med].

[7]. Reddy MP, Moorchung N, Chaudhary A. Clinicopathological profile of pediatric lymphadenopathy. Indian J pediatr.2002;69:1047—51.

[8]. Knight et al Mulne AF,Vassy LE. When is lymphnode biopy indicated in children with enlarged peripheral nodes? Paediatrics 1982;69:391—6.

[9]. Mishra S. D, Garg B.K. et al Cervical Lymphadenopathy in children: A study of 137 cases. Indian Paaediatrics,1972:9(12):812—8155.

[10]. Leon van de School,Aronson D.C.et al The role of in children with persistant and suspicious lymphadenopathy. Ournal of paediatric surgery,2001;36(1):7—11.

[11]. Khan RA, Wahab S, Chana RS, Naseem S, Siddique S. Children with significant cervical lymphadenopathy. Clinicopathological analysis and role of fine-needle aspiration in Indian set up. J Pediatr (Rio J) 2008;84:449—54. [Pub Med]

[12]. Narang R.K,pradhan S. et al place of FNAC in diagnosis of lymphadenopathy. Indian Journal of Surgery,1986;133—137.

[13]. Rapackwicz A, Thuy Le B, Simsir A, Cangiarella J, Levine p. Spectrum of head and neck lesions diagnosed by Fine needle aspiration cytology in the pediatric population .Cancer 2007;111:242—51.

[14]. Mandal,Mukherjee D et al FNAB cytology in diagnosis of cervical lymphadenopathy. Indian Med.Association,1989;87(12)p:281—283.

[15]. AL-muhim AS, AL-Ghamdi A M, A L—Marzooq YM et al. The role of fine needle aspiration cytology in cervical lymphadenopathy. Saeedi Med J. 2004 ;25 (7):862—5.

*M Koteswari. "Role of Fine Needle Aspiration Cytology in Children With Significant Cervical Lymphadenopathy - A Retrospective Study Evaluating Its Diagnostic Role & Efficacy." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.12 (2017): 51-55