

Cytomorphological Spectrum of Head And Neck Lesions in Pediatric Patients

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Abstract

Aim: To study the cytomorphological spectrum of head and neck lesions in pediatric patients, correlating with histopathological examination wherever necessary.

Material and Methods: This is a hospital based, prospective study conducted Over a period of 2 years from January 2015 to December 2016.

Results: FNAC was performed on 7335 patients. Out of which 300 cases belonged to 0-12 years age group. Among these Cervical lymphnodes are the most commonly affected (210 cases, & 69.7%), in which Granulomatous lymphadenitis and Reactive lymphadenitis are the frequently encountered lesions. Second most common site is Thyroid followed by skin & soft tissues, lesions of salivary gland and oral cavity lesion are also encountered.

Conclusions: FNAC plays a crucial role in the diagnosis of pediatric head and neck lesions. A preliminary diagnosis can be made within a short time. Histopathological examination can be advised for confirmation of diagnosis in suspicious cases.

Keywords: Fine needle aspiration cytology, pediatric lesions, granulomatous lymphadenitis, Reactive lymphadenitis.

I. Introduction

Fine needle aspiration cytology (FNAC) 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. Moreover, advanced ancillary techniques such as cell block preparation, immunochemistry, cytogenetic studies, electron microscopy and Flow cytometry can be performed on the aspirated material. For quite a long time, only a few research articles were published in Indian pediatric literature archives. But now it is also becoming pretty popular in pediatric patients. FNAC of head and neck region is well accepted and it has high specificity.^[1] FNAC is a helpful tool, for clinicians and surgeons, in deciding the further line of treatment and management. Cost of diagnosis is decreased by FNAC and the process of diagnosis is accelerated. Selection, guidance and planning the modality of treatment is done on rapid basis.^[2]

II. Material And Methods

The present study is conducted in the department of pathology, at a tertiary care hospital, over a period of 2 years (from January 2015 to December 2016). This study was a hospital based study of prospective type. The study was done to evaluate the cytomorphological spectrum of head and neck lesions in pediatric age group and compare the results with other studies. Patients coming to OPD of the departments of pediatrics, surgery, medicine, pulmonology and E.N.T, who were advised FNAC for their mass lesion in head and neck region are included in the study. A brief clinical history and consent was taken from the parents of the children. A thorough physical examination of the lesion / lesions was done. Smears were made from the aspirated material and stained with Geimsa staining and Ziehl neelsen staining in addition to routine H & E staining.

III. Results

FNAC was performed on 7335 cases in 2 years, out of which 300 cases are of 0—12 years age group. (4.09%). Out of these, 164 children are males (54.67%) and 136 children are females (45.33%). Most common site of the FNAC was cervical lymphnodes (210 cases), followed by Thyroid (36), Skin (34), Soft tissue (11), Salivary gland (8), and oral cavity (1). In (Table 1).

Table 1 : Distribution of cases in different sites, non-malignant and malignant lesions.

S.no	Site	No.of cases	Non-malignant (inflammatory &	Malignant
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			benign)	
1	Lymph node	210(70 %)	202	8
2	Thyroid	36(12 %)	35	1
3	Skin	34 (11.33%)	34	0
4	Soft tissues	11 (3.67%)	10	1
5	Salivary gland	8 (2.67 %)	8	0
6	Oral cavity	1 (0.33%)	1	0
Total		300	290 (96.67%)	10(3.33%)

Table 2 : Cytomorphological diagnosis of lesions at different sites

Site and number of cases	Diagnosis	Number of cases (diagnosis-wise)
Lymphnode (210cases)	Granulomatous lymphadenitis	88
	Reactive hyperplasia	88
	Lymphoproliferative lesion (Hodgkins lymphoma=1)	9
	BCG adenitis	1
	Unsatisfactory samples	24
Thyroid (36 cases)	Immune Thyroiditis	19
	Thyroglossal cyst	4
	Goitre	4
	Simple goiter	2
	Colloid goiter	1
	Physiological goiter	1
	Benign lesions	2
	No evidence of neoplasm	1
Un –satisfactory samples	6	
Skin (34cases)	Abscess	27
	Epidermoid cyst	7
Soft tissues (11cases)	Lipoma	7
	Hamartoma	1
	Small blue round cell tumor	1
	Unsatisfactory sample	2
Salivary gland (8 cases)	Sialidenitis	4
	Retention cyst	1
	Unsatisfactory samples	3

Oral cavity (1 case)	cystic lesion	1
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Most common diagnosis in cervical lymph nodes is granulomatous lymphadenitis (88\300) and reactive lymphadenitis (88\300), followed by lymphoproliferative lesions(9) and BCG vaccine induced lymphadenitis(1). (table2). Lymphoproliferative lesion was seen in 9 cases ,out of which one case was Hodgkins lymphoma.

Image 1: smear shows epithelioid cells, lymphocytes plasma cells & histiocytes against a necrotic background . (H& E , X 400).

Granulomatous Lymphadenitis

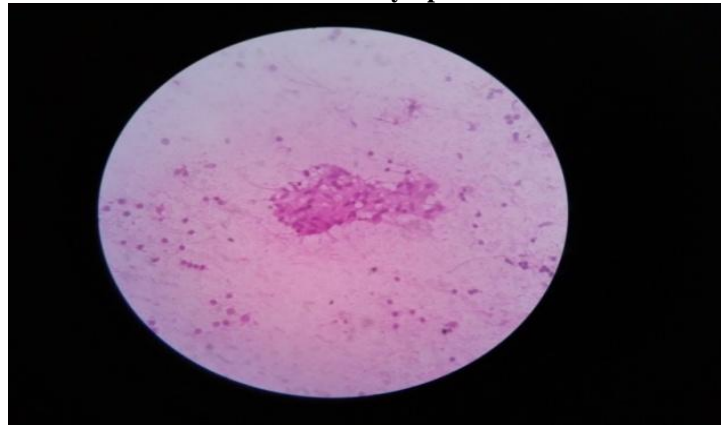


Image 2: Smear shows acid fast bacilli with inflammatory cells against a necrotic background (Z N stain , X 1000).

Tuberculous Lymphadenitis

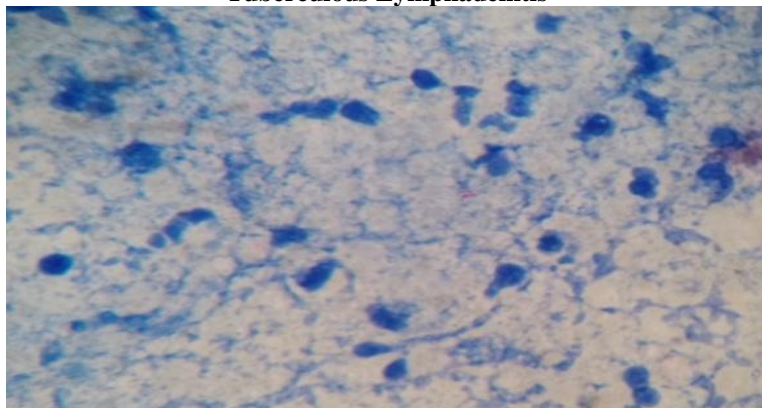


Image 3: Smear shows lymphocytes, eosinophils, neutrophils and classical Reed –Sternberg cells (H & E , X 400)

Hodgkins lymphoma.

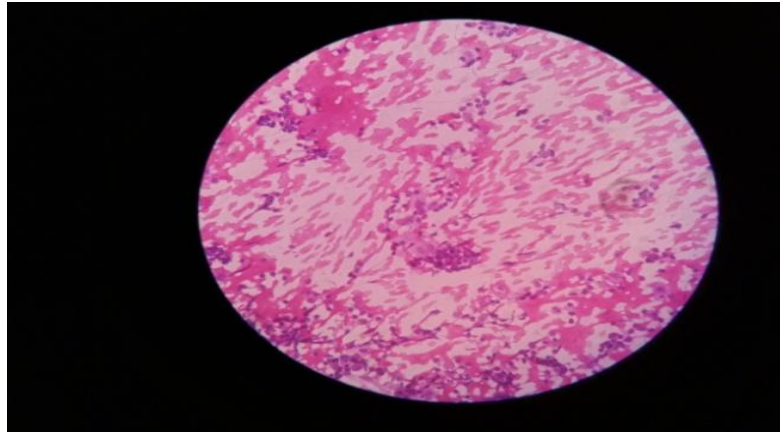
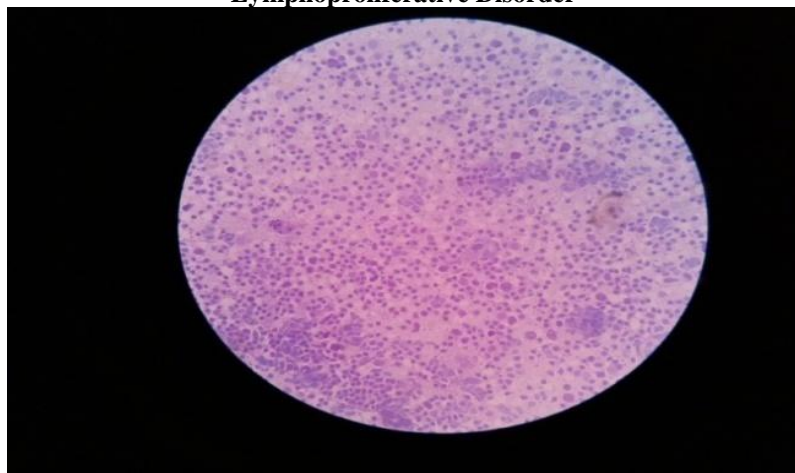


Image 4: smear shows monotonous proliferation of lymphoid series of cells , consists of small, large lymphocytes and plasma cells with irregular nuclear membrane (Giemsa , X 400).

Lymphoproliferative Disorder



Out of 36 Thyroid lesions, Immune Thyroiditis (19 cases) was the main diagnosis Thyroglossal cyst (4 cases), Goitre (4 cases) [Simple goiter-2, Colloid goiter-1 Physiological goiter-1] and 2 cases of Benign lesions were also encountered.

IV. Discussion

Head and neck lesions in pediatric age group are mostly benign in nature. Only a few cases are malignant. FNAC has got limited acceptance in pediatric population as compared to adults.^[3] So far Only a limited number of studies concerned with FNAC`s in children were published . These studies include Head and Neck lesions, soft tissue lesions, lesions of liver and kidney.^[4-7]

In the present study, out of 300 cases -unsatisfactory smears are 37 cases [Lymphnodes-27, Thyroid-6, Salivary gland-3, Skin-2, soft-tissue-2]. Rest of the 263 cases are satisfactory for evaluation. Male:Female ratio in the present study is 1.2:1, which is in concordance with other studies, it was 1.1:1 in study by S Prathima et al^[8], M:F ratio in study by Handa et al was 1.5:1^[9], M:F ratio was 1.5:1 in a study by Alok Mohan et al. ^[10].

Table 3: Comparison of various studies in pediatric population.

Comparative study	Handa U et al ^[9] (2003)	Amy Rapackwicz et al ^[11] (2007)	P.Mittra et al ^[2] (2013)	Alok Mohan et al ^[10] (2016)	Present study
Total cases	692	85	100	215	300
Age group	0-4	0-18	0-15	0-12	0-12
Sex predominance	M:F=1.5:1	Male(69.4%)	Male(55%)	M:F=1.52:1	M:F=1.2:1
Most common	Cervical L.N	Cervical L.N	Cervical L.N	Cervical L.N	Cervical L.N

site	(84.3%)	(69.4%)	(87%)	(83.72%)	(70%)
Non-malignant	98.46%	83%	88.17%	93.67%	96.67%
Malignant	1.54%	17%	11.83%	2.33%	3.33%

In the present study , the commonest site of involvement is cervical lymphnodes . This finding is in concordance with various studies done by S prathima et al , Shonubi et al. [8][12].

Cytopathological findings among cervical lymphnode lesions are compared (Table.4) with similar studies.

Table 4: Comparison of studies of lymphnodes of Head and Neck lesions of Children

Comparative Study	Handa U et al [9] (2003)	Amy Rapackwicz et al [11] (2007)	P.Mittra et al [2] (2013)	Alok Mohan et al [10] (2016)	Present study
Lymph nodes	84.3%	69.4%	87%	83.72%	70%
Reactive hyperplasia	63%	66%	42%	51.1%	41.9%
Granulomatous lymphadenitis	25%	15%	55%	38.3%	41.9%
Lymphomas	6 cases	5 cases	5 cases	4 cases	9 cases

Reactive lymphadenitis and granulomatous lymphadenitis are the most common findings . P. Mittra and Alok Mohan also published similar findings in their studies. In Skin and Soft tissue lesions , findings are comparable with other studies . The skin lesions comprised Abscesses, (27 cases) and Epidermoid cysts(7cases) . Soft tissue lesions are Lipomas(7), Hamartomas(1), and Small Blue round cell tumors(1).(Table.2). Amy Rapackwiz^[11] reported cases of Lymphangiomas and Haemangiomas . where as P. Mittra^[2] reported cases of Epidermal inclusion cysts , Haemangiomas and Lymphangiomas and Alok Mohan^[10] reported cases of vesiculobullous lesions, Epidermal cysts, Dermoid cysts, Lipomas, Hemangiomas, Lymphangiomas and Small blue round cell tumors in their studies.

In the present study, all the six Salivary gland lesions are diagnosed as Sialadenitis only. where as Alok Mohan had reported 8 cases , out of which 3 cases are pleomorphic adenoma & Mucocele each , and 2 cases of Sialadenosis. Thyroiditis is the common lesion among Thyroid FNAC's, followed by(4 cases) of goiters, thyroglossal cysts and (2 cases) of Hashimotos Thyroiditis. In AlokMohan,s^[10] study colloid goiter was the main lesion with one case of Hashimotos thyroiditis, where as P .Mittra^[2] got only one case of Hashimotos thyroiditis.The percentage of malignant lesions in head and neck region in pediatric population in the present study is 3.33% . HandaU^[9] and Alok Mohan ^[10] also found similar results i.e 1.54% and 2.33 % respectively. Whereas a few studies conducted by researchers like P. Mittra^[2] (11.83%) and Amy Rapackwiz^[11](17%),the percentage was little higher than the present study. However the present study has few red herrings.

Image 5: Biopsy shows Thyroid follicular epithelial cells , with optically clear nuclei arranged in solid sheets & follicular patterns.

(H& E , X 400)

Follicular Variant Of Papillary Carcinoma Of Thyroid

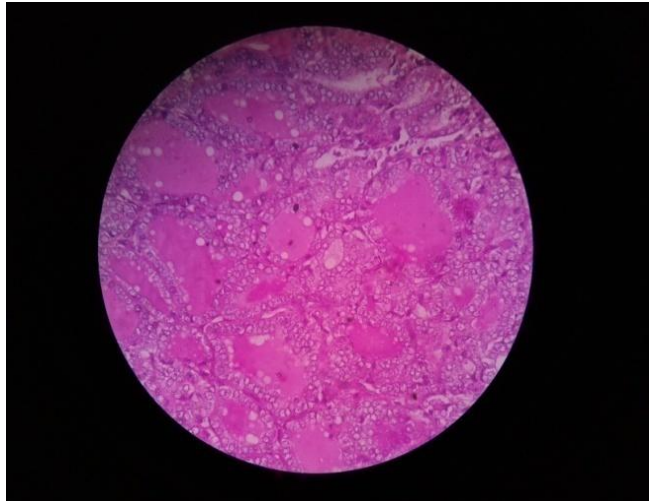
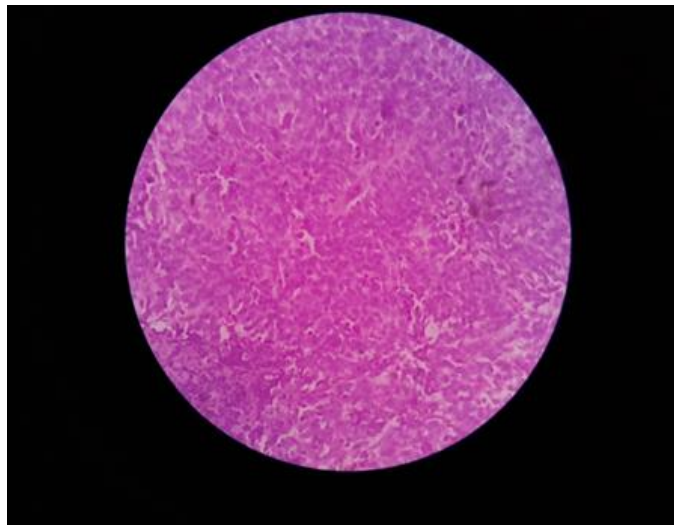


Image 6: Biopsy shows round to oval cells arranged in sheets and areas of reactive lymphoid hyperplasia – suggestive of Blue round cell tumor . (Blastemal tumor) (H& E , X 400).

Small Blue Round Cell Tumor



One case of Thyroid FNAC reported as hyperplastic lesion with suspicious of papillary neoplasm in Cytology. But in histopathology it is reported as Follicular variant of papillary carcinoma of Thyroid.(Image 5). Another case of swelling in cervical region, cytologically reported as granulomatous lymphadenitis, it is histopathologically reported as Small blue round cell tumor (Blastemal tumor).(Image 6). These two cases emphasize the fact that histopathological correlation is essential in confirming the diagnosis of malignant lesions.

V. Conclusion

FNAC is a safe , easy and reliable method for evaluating Pediatric lesions . It is a cost –effective and minimally invasive procedure. In the present study, result are in concordance with other studies. However histopathological correlation was not available in all the cases. If it were the case, the present study would have been more affirmative.

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