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Study of Cytological Pattern of Tubercular Lymphadenitis

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Abstract – Background : Fine needle aspiration cytology is a diagnostic tool in which cells are extracted from a palpable swelling using FNAC gun, syringe and fine needle. It is a simple, speedy, safe, cost effective and accurate technique being used worldwide. [1, 2] Lymphadenopathy is one of the common conditions encountered in clinical practice with varied etiological predispositions.[3]

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Study of Cytological Pattern of Tubercular Lymphadenitis

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Abstract – Background : Fine needle aspiration cytology is a diagnostic tool in which cells are extracted from a palpable swelling using FNAC gun, syringe and fine needle. It is a simple, speedy, safe, cost effective and accurate technique being used worldwide. [1, 2] Lymphadenopathy is one of the common conditions encountered in clinical practice with varied etiological predispositions.[3]

Aim : To know the cytological pattern of tubercular lymphadenitis of this region and correlation with biopsy whenever possible. To evaluate the utility of fine needle aspiration cytology of lymph nodes.

Study Setting & Design : This proospective study was conducted at the department of Pathology, of a tertiary healthcare teaching center for a period of three years from October 2000 to January 2003.

Materials And Methods : 22 to 23 gauze needle with 10ml disposable syringes were used. Minimum of three stains Hematoxylin & Eosin (H & E) stain, MGG S stain and AFB stain were done. Wherever possible Gram stain was also done. The cytological diagnoses were correlated whenever possible with histopathological examination.

Statistical Analysis : The data entry was carried out using Microsoft Office Excel worksheet and was analyzed.

Results : Cytological diagnosis of tubercular lymphadenitis was made for 109 cases. The smears were divided into four groups.

I. Epithelioid cell clusters with or without Langhan's giant cells with necrotic material.
II. Epithelioid cell clusters with or without Langhan's giant cell, without necrosis.
III. Occasional epithelioid cell collection without typical necrosis giant cells.
IV. Only necrotic material, without epithelioid cell clusters or giant cells.

The positivity was 16.67%, 7.3%, 11.12% and 50 % for group I, II, III and IV respectively.

Conclusion : Fine needle aspiration cytology is an useful technique for evaluation of patients with lympahdneopathies, because of lack of complication and excellent results. The present study is relative sensitive and specific. Diagnostic accuracy can be further improved by studying the cytological pattern of the tuberculosis, immunocytochemical stains and analysis male number of cases along with histopathological correlation.

Keywords : Cytological pattern, Lymphadenopathy, Tuberculosis and biopsy.

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I. Introduction

Lymphadenopathy is one of the common conditions encountered in clinical practice with varied etiological predispositions.[1] it always poses dilemma for the clinician. Lymphadenopathy is one of the major causes of morbidity particularly in pediatric age group. Hence it is essential that a correct diagnosis is made as early as possible.

Fine needle aspiration cytology (FNAC) is a diagnostic tool in which cells are extracted from a palpable swelling using FNAC gun, syringe and fine needle. It is a simple, speedy, safe, cost effective and accurate technique being used worldwide.[2,3] Fine needle aspiration studies is being increasingly used for evaluation of lymphadenopathy.[4] lymph node FNAC can be performed routinely as a first approach to lymohadenopathies. The clinical value of FNAC is not limited to neoplastic conditions, but also in diagnosis of inflammatory, infectious and degenerative conditions. In most cases architectural distortion is minimal or absent, if biopsy becomes necessary. With adequate cytological examination and fallow-up, a large number of biopsies can be avoided.

II. Material and Methods

Study Setting & Design : The present prospective study was carried out in the department of pathology, Sree Siddhartha Medical College, Tumkur from Oct 2000 to Jan 2003.

Sample Collection and Laboratory Testing : 22 to 23 gauze needle with 10ml disposable syringes were used. Minimum of three stains H&E stain, MGG S stain and AFB stain were done. Wherever possible Gram stain was also done. The cytological diagnoses were correlated whenever possible with histopathological examination.

Data Management and Statistical Analysis : The data entry was carried out using Microsoft Office Excel worksheet and analyzed.

Ethical considerations: The protocol for this study was approved from the Chairman, and the secretary, institutional ethical committee (IEC). The approval was on the agreement that patient anonymity must be maintained, good laboratory practice/ quality control ensured, and that every finding would be treated

with utmost confidentiality and for the purpose of this research only. All work was performed according to the international guidelines for human experimentation in biomedical research.

III. Results

Cytological diagnosis of tubercular lymphadenitis was made 109 cases. The smears were divided into four groups.

I. Epithelioid cell clusters with or without Langhan's giant cells with necrotic material.
II. Epithelioid cell clusters with or without Langhan's giant cell, without necrosis.
III. Occasional epithelioid cell collection without typical necrosis giant cells.
IV. Only necrotic material, without epithelioid cell clusters or giant cells.

Groups I and II together amounting 65.13% of cases. The group-I consisted of 30 patients, group-II consisted of 41 patients. Group-III consisted of 18 patients while the remaining 20 patients belonged to group-IV.

AFB staining was done in all the cases. Group-I revealed AFB positively in 5 cases, group-II releaved AFB positively I 3 cases. Group-III releaved AFB positively in 2 cases, while the group-IV releaved AFB positively in 10 cases.

Biopsy correlation was possible in only 6 of group-1, 10 of the group-II, 4 of the group-III and 5 0f the group-1V.Amoung group-I, II, and IV all biopsies diagnosed as tubercular lymphadenitis on histopathological examination. In group-III, 2 cases were diagnosed as reactive lymphadenopathy and the remaining 2 cases as tubercular lymphadenitis.

IV. Discussion

Tubercular lymphadenitis constituted commonest group of lymphadenipathies diagnosed by fine needle aspiration, numbering 109 patients (36.33%) out of 300 patients of lymphadenopathy.

The results of our study were in accordance with many studies (Table-XIV0i.e.,Raghuveer et al 39(35.26%),Bharadwaj K.et al17 (40.95%).Prasad 16(45.76%).But studied by Khan et al 48 and Das Gupta et al 17 conducted by Aligarh and Calcutta respectively showed high incidence of tuberculosis. This must be in accordance with incidence of tuberculosis in that area 17.

Cytological features of tubercular lymph node were divided in to 4 groups (table-1).ZN staining was done in all the cases.ZN staining done in group-1 consisted of 30 patients, revealed positive in 5 patients. Group-II (fig -1) consisted 0f 41 patients revealed AFB positivity in 3 patients. Group II consisted of 18 patients' revealed AFB positivity in 2 patients. Group-IV consisted of 20 students revealed positivity in 10 patients.AFB positivity were maximum in the group with caseation only.(fig-2)

The result was in accordance with many studies 17, 35. For the bacilli to be demonstrated in the smears, their number should be between 10,000 to 1, 00,000 per ml of the material. If the number is less than this bacilli may be detected in the smears 19.the presence of AFB and its relation to immunological spectrum has been described by many authors. Lenzi and his colleagues (1977) proposed a point spectrum, at one pole were reactive cases showing a good cell mediated response, comparatively few bacteria and good response to treatment .At the other pole were unreactive cases, resembling lepreматous leprosy in showing numerous organisms in the apparent absence of all cell mediated immune response49.study by meter et al and Das et al found that 64-66% and 77.4% AFB positivity rates respectively in smeares containing only necrotic material or pus.Biopsy correlation was possible in 25 patients. Which included 6 patients of group-I, 10 of Group-II.4 of Group-III and 5of Group-IV.Biopsy results of group I, II, and iv confirmed the cytological diagnosis. Whereas biopsy of group-iii turned out to be reactive lymphodenopathy in two patients and remained as tubercular lymphadenitis in other two patients. There were difficulties in arriving at a definitive diagnosis in certain cases of tubercular lymphadenitis, when the aspirate shows a polymorphous picture with occasional epithelioid cells and obsence of typical Langhan's giant cells or caseous necrosis, making it necessary to resort to excisional biopsy for definitive diagnosis. This is particularly true in children, in whom a similar picture may be seen in cases of reactive lymphadenopathy due to viral or toxoplasma infection. Since the mere presence of occasional epithelioid cells is not diagnostic of any specific condition 35.In the present study 18 cases faced such difficulty. AFB was positive in only 2 cases. On biopsy examination 2 cases turned out to be reactive lymphadenopathy.

V. Conclusion

Fine needle aspiration cytology is an useful technique for evaluation of patients with lympahdneopathies, because of lack of complication and excellent results. The present study is relative sensitive and specific. Diagnostic accuracy can be further improved by studying the cytological pattern of the tuberculosis, immunocytochemical stains and analysis male number of cases along with histopathological correlation.

Table 1: Incidence of various types of cytologic picture with acid fast bacilll (AFB) positivity in patients of tubercular lymphadenitis.

Group No.	Cytological features on aspirated smear	No. Of cases	%	No.of cases positive for AFB	% of positivity
I	Epi.Cell clusters+Langhan;s giant cells+necrosis	30	27.52	5	16.67
II	Epi.Cell clusters+Langhan;s giant cells-necrosis	41	37.61	3	7.3
III	Occasional epithelioid cells only	18	16.51	2	11.12
IV	Necrotic material |pus only no epithelioid cells|no giant cells	20	18.34	10	50

Table 2 : Cyto-histopathological correlation of tubercular lymphadenitis.

Group. No.	Histopathological Diagnosis			
	No.of case in which biopsy done	Reactive lymphadenopathy	Tubercular lymphadenitis	Malignancy
I	6	-	6	-
II	10	-	10	-
III	4	2	2	-
IV	5	-	5	-

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