

Role of Fine Needle Aspiration Cytology in Tuberculous Lymphadenitis

Sanjay Surase*, Shantilal M Sisodia**, Rakesh Shedge***

Abstract

Tuberculous lymphadenitis continues to be one of the most common causes of lymphadenitis. FNAC avoids the physical and psychological trauma occasionally encountered after biopsy, general anaesthesia, a surgical operation and hospitalisation. We wanted to study the utility and limitations of FNAC in tuberculous lymphadenitis. Total 1272 FNAC cases with enlarged superficial lymphnodes were included in the study. Of all 800 cases of tuberculosis, histomorphological study was done in 4 patients and all 4 correlated with the cytologic diagnosis, thus giving diagnostic accuracy of 100%. Thus, FNAC lymphnode in tuberculosis can replace excision biopsy.

Introduction

Koss who devoted his life to cytology rightly said, "Thin needle aspiration cytology is a procedure whose time has come".¹ FNAC avoids the physical and psychological trauma occasionally encountered after biopsy, general anaesthesia, a surgical operation and hospitalisation.² It is almost safe, cost effective and at the same time conclusive.² In developing countries such as India tuberculous lymphadenitis continues to be one of the most common causes of lymphadenitis.² Clinical diagnosis has pit falls and hence a morphological diagnosis is required before starting antituberculous therapy.³ The present study emphasizes on the diagnostic utility of FNAC in tuberculous lymphadenitis.

Aims and Objectives

To study the utility and limitations of FNAC in tuberculous lymphadenitis. To study the various cytomorphologic features of presentation in tuberculous lymphadenitis.

*Lecturer; **Associate Professor; Department of Pathology, Grant Medical College, Byculla, Mumbai.

Material and Methods

This study was undertaken from September 2001 - October 2003. A total number 1272 FNAC cases with enlarged superficial lymphnodes were included in the study. The material used were 23 G needles, 10 ml standard disposable syringes, grease free glass slides, 70-90 % ethanol as fixative and skin disinfectants.^{4,5} The criteria for considering lymphnodes to be aspirated was 1.5 cm or more for inguinal lymphnodes and about 1 cm for extrainguinal lymphnodes. Smears were stained with haematoxylin and eosin, papanicolaou stain and Ziehl Neelsen stain. The smears were screened systematically for cellularity, background of the smear e.g.; presence of inflammatory cells, blood, necrosis (caseous type or not) and cytomorphology of cells. The diagnosis of tuberculosis was made using the following cytological criteria.⁶

Group 1 : Epithelioid cell clusters with or without Langhans giant cells with necrotic material.

Group 2 : Epithelioid cell clusters with or without Langhans giant cells without necrotic

material.

Group 3 : Epitheloid cell clusters with or without Langhans giant cells / necrosis.

Group 4 : Only necrotic material without epitheloid cells, or giant cells, Zeihl Neelsen staining done to demonstrate AFB.

Observations

Of the 1272 cases studied the male: female ratio was 1.2: 1 (Table 1). Majority cases were of tuberculosis accounting for 62.89 % of all cases (Table 2) cough with expectoration, fever and weight loss were the presenting symptoms in majority of cases (Table 3). Cytomorphology of tuberculous lymphnode aspirate reveal caseous necrosis in 91.76 % cases, epitheloid cells in 84.89 % cases and AFB positivity in 13.10 % cases (Table 4). The incidence of AFB positivity in patients of tuberculous lymphadenitis was highest with the cytological picture of necrosis, polymorphs and lymphocytes i.e. 29.48 %. However AFB

Table 1

Sex wise distribution	Total no of cases of lymphadenopathy	Percentage (%)
Male	697	54.79
Female	575	45.2
Total	1272	100

was negative in cases with cytomorphology showing epitheloid cells only (Table 5).

Discussion

Tuberculous lymphadenitis constituted 800 (62.89 %) of 1272 cases. The result of our study is in accordance with studies by Bharadwaj K *et al.*³ Orell *et al*⁶ emphasized that the criteria for diagnosis of tuberculous lymphadenitis is suggested by the presence of lymphocytes, epitheloid cells, Langhans giant cells,

Table 3

Clinical features and History	No. of patients
Lymphadenopathy	1272
Asymptomatic	153
Fever	208
Cough with expectoration	322
Anorexia/ weight loss	132
Past H/o of tuberculosis	86
Taken complete AKT	98
Classical evening rise of fever	55
Presently on AKT	21
History of contact with tuberculosis patient	28
Pain in swelling	61
History of exposure	81
Hoarseness of voice	22
Breast lump	2
Difficulty of opening mouth	3

Table 2

Age	Reactive LN	Suppurative LN	Tuberculous LN	BCG LN	Filarial LN	Leprosy LN	Malignancy
0-10	74	5	40	1	-	-	4
11-20	82	9	150	-	1	-	4
21-30	83	16	310	-	-	1	7
31-40	47	12	214	-	-	-	14
41-50	31	8	59	-	-	-	20
51-60	9	4	19	-	-	-	20
61-70	6	2	7	-	-	-	10
71-80	-	-	-	-	-	-	2
Total	332	56	800	1	1	1	81

Table 4

Cytomorphological features	Total no. of cases	Percentage (%)
Epitheloid cells	680	84.89
Caseous necrosis	735	91.76
PMN-Leucocytes-Lymphocytes	332	41.44
Giant cells	62	7.74
AFB positive	105	13.10

Table 5

Cytological features	No. of cases	AFB cases	Percentage (%)
Epitheloid cells only	4	0	-
Epitheloid cells, giant cells	62	2	3.22
Epitheloid cells, giant cells, necrosis	291	11	3.78
Epitheloid cells, necrosis	69	8	11.59
Necrosis, PMN, Lymphocytes	78	23	29.48
Acellular material	43	19	14.18
Epitheloid cells, Necrosis, PMN, Lymphocytes	254	42	16.53

neutrophils, caseous necrotic background (eosinophilic granular material without recognizable cellular elements) and haemorrhage. Study by Arora *et al*⁷ found higher AFB positive rates due to a combination of Z-N, Auramine-O Rhodamine and PAS staining techniques. They found 100% AFB positivity in cases with acellular necrotic material while in our study with similar material we found AFB positivity of 14.18%. As per the cytological criteria applied in this study, in group 1 and 2 cases, the diagnosis of tuberculosis is easier to make because of the presence of characteristic epitheloid cell clusters with or without Langhan's giant cells with or without necrotic

material.¹⁶ Purulent aspirates do not show epitheloid granuloma or Langhan's giant cells. Z-N staining of purulent or cheesy aspirates, suspicious of tuberculosis confirms the diagnosis.⁷ The relationship between the presence of granulomas and AFB positivity is inverse.⁷ Granulomas and necrosis are of help in diagnosis of tuberculosis but with limitations. Demonstration of AFB by Z-N or Auramine O- Rhodamine, mycobacterial culture or PCR should be the aim in establishing the diagnosis.⁷ A negative mycobacterium examination does not exclude the diagnosis of tuberculosis.⁸ In spite of tuberculosis being chronic granulomatous disease 11-20% cases showed polymorphonuclear infiltrate. For bacilli to be demonstrated in smears, their number should be atleast 10000-100000/ml of the material. A negative culture examination can be from the prior AKT or inadequacy of the material submitted for the culture.⁸ In cases of predominant PMN infiltrate tuberculosis should be ruled out by doing culture of aspirate, Z-N staining and lymph node biopsy.⁹ Of all 800 cases of tuberculosis, histomorphological study was done in 4 patients and all 4 correlated with the cytologic diagnosis, thus giving diagnostic accuracy of 100%. Thus, FNAC lymphnode in tuberculosis can replace excision biopsy.

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