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FNAC IN TUBERCULOUS LYMPHADENITIS: ONE YEAR RETROSPECTIVE STUDY IN A TERTIARY CARE HOSPITAL IN JHARKHAND INDIA.

Pathology

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ABSTRACT

Background: In developing countries like India, tuberculous lymphadenitis is one of the most common causes of lymphadenopathy. However, anti-tubercular treatment cannot be given only on clinical suspicion. Cytomorphology with acid fast staining proves to be a valuable tool in diagnosing these cases.

Aims : To study the utility, limitations of fine needle aspiration cytology and various cytomorphological presentations in reference to Ziehl-Neelsen staining in tuberculous lymphadenitis.

Material and Methods: In a study period of October 2017 to September 2018, 325 consecutive superficial lymph nodes, clinically suspected to be tuberculous were subjected to cytological evaluation with Hematoxylin & Eosin, Giemsa and Ziehl-Neelsen stained smears. In addition, demographic profile of these patients with clinical presentation was also studied.

Results: Incidence of tuberculous lymphadenitis was145 (44.62%) . Only Necrosis without epithelioid cell granulomas was the most common cytological picture .Threefourth of the patients presented in second to fourth decade of life. Cervical region was the most common site of involvement with solitary lymphadenopathy as the most common presentation in contrast to matted lymph nodes as reported by others.

Conclusions: Fine needle aspiration cytology is a safe, cheap procedure requiring minimal instrumentation and is highly sensitive to diagnose tuberculous lymphadenitis. The sensitivity can be further increased by complementing cytomorphology with acid fast staining. In acid fast staining negative cases, yield of acid fast bacilli positivity can be increased by doing Ziehl-Neelsen staining on second smear or decolourized smear revealing necrosis or by repeat aspiration. Microbiological assessment should also be done in such cases

KEYWORDS

INTRODUCTION

FNAC is the alternative to excision biopsy for lymph nodes and is an easy procedure for collection of material for cyto-morphological and bacteriological examination.[1]it is almost safe, cost effective and conclusive procedure.[2] Tuberculous lymphadenitis is a very common cause of superficial lymphadenopathy in countries like India. The aim of this study was to describe various cytological pictures of tuberculous lymphadenitis with their relative frequency and to assess correlation between FNAC and Ziehl-Neelsen (Z-N) staining in diagnosing tuberculous lymphadenitis. Tuberculosis (TB) carries a high risk of morbidity and mortality. TB has widespread involvement and rarely any tissue or organ is not involved by it. Most common is the pulmonary involvement [3]which has caused numerous deaths in the past. The histology of TB is a characteristic showing granuloma formation by epithelioid histiocytes and Langhan's type Giant cells with or without caseation necrosis. This pattern is also preserved somehow in cytology specimens[4] In the present study, granulomatous inflammation consistent with Tuberculosis diagnosed on FNAC will be analyzed using special stains like ZN (Ziehl Neelson's).

MATERIAL AND METHODS : Three hundred and twenty five consecutive superficial lymph nodes, clinically suspected to be tuberculous, were aspirated for cytological evaluation after thorough clinical examination in a study period of October 2017 to September 2018 at Pathology department RIMS Ranchi . Aspirations were performed using 22 G needle and disposable 10 ml plastic syringe. In all the cases, alcohol fixed smears were made and stained with Hematoxylin & Eosin, one air-dried smear was stained with Giemsa stain, one smear was stained with Z-N technique (hot method) and an additional slide was kept unstained for any further required stain. The cytology smears revealing features of tuberculous lymphadenitis were grouped into two categories: epithelioid granulomas with caseous necrosis, epithelioid granulomas without necrosis. In addition, demographic profile of tuberculous patients with their present and past treatment history and clinical characteristics of lymphnodes were also studied.

OBSERVATION AND RESULTS

Out of 325 superficial lymphnodes aspirated 145 cases are tuberculous lymphadenitis which include both (epithelioid granulomas with caseous necrosis 95 cases and epithelioid granulomas without necrosis 50 cases) . out of 145 cases of TB lymphadenitis 120 cases showed AFB positivity while 25 cases were AFB negative with cytological picture of tuberculous lymphadenitis .110 cases show necrotizing lymphadenitis without epithelioid granuloma and AFB negative . 45 cases revealed reactive lymphnode hyperplasia . 25 cases included inadequate samples, lymphomas, metastases etc. Among tuberculous cases, most of were in the 21-40 yrs of life(80 cases 55.17%) with male to female ratio of 1.5:1 (Tables 1 and 2)

TABLE 1: Incidence of tuberculous, necrotizing and reactive lymphadenitis in male and female .

Diagnosis	Male	Female	Total
Tuberculous lymphadenitis	87	58	145
Necrotizing lymphadenitis	62	48	110
Reactive lymphadenitis	33	12	45
others (inadequate samples, lymphomas, metastasis)	16	09	25
Total	198	127	325

Out of 325 superficial lymphnodes aspirated 198 were males and 127 were female (male : female is 1.55 :1).

TABLE 2: Incidence of tuberculous lymphadenopathy in relation to age and sex .

Age group	Male	Female	Total	%
0-20 yrs	28	17	45	31.03%
21-40 yrs	48	32	80	55.17%
41-60yrs	08	06	14	9.66%
>60yrs	04	02	06	4.13%
Total	88	57	145	100%

The cervical region was the most common site; involved in 80% of tuberculous cases, followed by axillary (14.4%) and inguinal (5.6%).In our study, most common presentation was single palpable cervical lymphnode in 58.7% of cases followed by multiple unilateral cervical lymphadenopathy in 21.2% of cases and multiple bilateral cervical lymphadenopathy in 10.1% of cases. Grossly purulent material was aspirated in most of cases followed by caseous or cheesy material and blood mixed. Out of 145 cases showing cytological picture of tuberculous lymphadenitis, smears revealed epithelioid granulomas with caseous necrosis in 95 cases(65.51%) ,and epithelioid granulomas without necrosis in 50 cases(34.49%).

AFB positivity was found in 86.32%(82 cases) of the cases showing epithelioid granulomas with caseous necrosis, 76% of cases with epithelioid granulomas without necrosis. (Table 3). Overall AFB positivity was seen in 82.76%. cases.

TABLE 3: Various cytomorphological pictures in tuberculous lymphadenopathy

Cytomorphological picture	No. of cases	%	AFB positive cases	AFB negative cases
Epithelioid granulomas with caseous necrosis	95	65.51%	82(86.32%)	13(13.68%)
Epithelioid granulomas without necrosis	50	34.49%	38(76%)	12(24%)
Total	145	100%	120(82.76%)	25(17.24%)

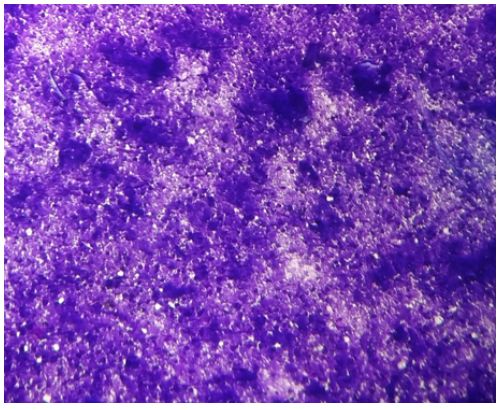

FIG 1. The micropictograph showing necrotizing lymphadenitis (leishman giemsa stain (200x)

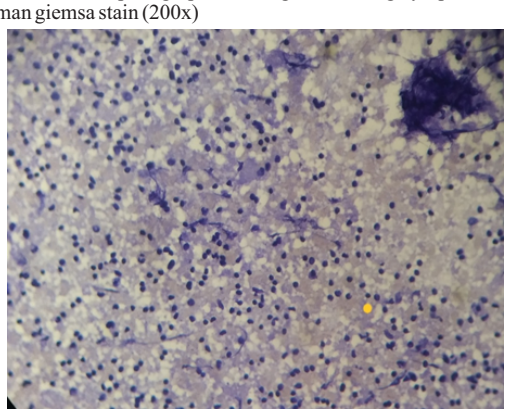

Fig 2) The micropictograph showing granulomatous lymphadenitis (pap stain 200x)

DISSCUSSION

FNAC lymph node is a simple, noninvasive, cheap tool with high sensitivity in tuberculous cases and can replace excision biopsy for diagnosing tuberculosis in developing countries like India. Tuberculous lymphadenopathy can be seen in patients ranging from early to advanced age. In our study, the youngest patient was 5-year-old and the oldest was 72 years' old. In a study by Ahmad et al, the youngest patient was two-year-old and the oldest being 95 years[5].in our study majority of the patients (55.17%) were in the 21-40 yrs of life. Similar age distribution was seen in a study by Ergete and Bekele[6], Purohit et al[7] and Dandapat et al[8]. A male predominance with 1.5:1. sex ratio was seen in our study. similarly male predominance was noted by Rajsekaran et al[9] , and Ahmad et al[5]. Clinically, in our study, cervical region was the most commonly affected region, involved in 90% of cases. This was in concordance with Bezabih et al[10] who observed cervical involvement in 74.2% of cases. A study conducted by Sharma et al[11] in pediatric age group also showed similar results that most common involvement is of cervical region (88.2%).Single lymph node enlargement was seen in 48.6% cases of tubercular lymphadenopathy by Aggarwal et al[12]. We noted a much higher incidence(44.62%) of tuberculous lymphadenopathy while Ahmad et al[5] found 38% and Tilak et al[13] 38.8% cases of tuberculous lymphadenopathy. The high incidence noted by us may be because our institute is a referral centre for tuberculosis cases. Most common cytological pattern seen was epithelioid granulomas with caseous necrosis. Similar finding was seen in in a study by Gupta et al[14]. Highest AFB positivity was seen in smears revealing epithelioid granulomas with caseous necrosis (86.32%). In our study, overall AFB positivity was seen in 82.76% of cases. AFB positivity was observed in 71.7% of cases by Ergete and Bekele[1] , 59.4% cases by Bezabih et al[4] , 45.6% cases by Dasgupta et al[15] and 19.6% cases by Aggarwal et al[12]. AFB negative cases revealing only epithelioid cell granulomas without necrosis should be clinically correlated with microbiological assessment. Similarly, atypical cells should be ruled out in smears showing necrosis only without epithelioid cell granulomas and AFB negativity and material should be submitted for culture. Microbiological assessment is necessary in AFB negative cases to confirm the diagnosis of tuberculosis as approximately 10,000-100,000 mycobacterial organism/ml of sample should be present for smear AFB positivity.

CONCLUSION

FNAC can be performed as outpatient department procedure in superficial lymphadenopathy cases. Procedure is safe, well accepted by patients, very cost-effective and requires minimum instrumentation in comparision to excision biopsy. Diagnostic accuracy as high as 100% in tuberculous lymphadenopathy cases has been reported by Tripathy et al[16], 84.4% by Dasgupta et al[15]. Therefore even in most remote areas, FNAC can be used for diagnosing tuberculous lymphadenopathy. Coupling FNAC with Z-N staining increases the diagnostic accuracy. Diagnostic accuracy can be further increased by submitting some material obtained by FNA for culture.

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