

FNAC of tubercular lymph node –An alternative to excision biopsy

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Abstract

Background: Tuberculosis is a major health problem in our country, India. Tubercular involvement of cervical lymph node is very common. Diagnosis of tubercular lymphadenitis can be made by using various biochemical, micro bacteriological laboratory methods. Above all these methods stands Fine needle aspiration cytology (FNAC) of affected lymph node which is simple, quick, easy and effective method to diagnose tubercular lymphadenopathy.

Aim: This study is done to

1. Study various cytological patterns of tubercular lymphadenitis & find out the AFB positivity of such cases.
2. To find out how far it can obviate the biopsy of tubercular lymph nodes for diagnosis.

Material and Methods: Total 465 suspected cervical tubercular lymphadenopathy patients of were included in study. Detailed clinical history regarding duration of swelling, sites, size, consistency, and mobility were taken into account. Fine needle aspirations were done and the smears were air-dried and stained with May- Grünwald Giemsa (MGG) and Ziehl-Neelsen (ZN) stain for acid fast bacilli (AFB).

Result: During this period of five years 465 patients of cervical lymphadenopathy were diagnosed as tubercular lymphadenitis. AFB positivity was 55.2%.

Conclusion: FNAC can be used as diagnostic tool alone in case of tubercular lymphadenitis.

Keywords: FNAC, Z-N staining, Tubercular.

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Introduction

Tuberculosis is a granulomatous inflammation, resulting from infection by Mycobacterium tuberculosis. It affects 1/3rd of the world population. Despite of progress in prophylaxis and the therapy tubercular lymphadenitis still remains a major health problem in developing countries like India. 2/3rd of the cases in developing countries are from economically lower income groups. Younger age group patients are affected more commonly in developing countries as compare to adult population in developed countries. Tubercular lymphadenitis is most common cause of superficial lymphadenopathy. Most common form of extrapulmonary tuberculosis is tubercular lymphadenitis and cervical lymph nodes are most commonly affected group of lymph nodes. Therefore one should be aware of its various different cytomorphological patterns in day to day cytology reporting. FNAC is widely accepted as the accurate sensitive, specific and cost effective procedure in the diagnosis of tubercular lymphadenitis. It is also cheap, speedy and easy to perform with minimum

complications making it suitable in developing countries with scant resources.

Material and Methods

Present study was conducted in the department of pathology (cytology section) over a period of 5 years from January 2010 to January 2015. All patients of suspected cervical tubercular lymphadenopathy were included for study. Suspected cases criteria was based on history, routine hematological examination and mantoux test. Detail clinical history was taken including the size, duration and history of fever. Fine needle aspirations were done using 22G needle and disposable syringe of 20ml. The smears were air-dried and stained with May- Grünwald Giemsa (MGG) and Ziehl-Neelsen (ZN) stain for AFB. In doubtful cases a repeat aspiration was done and only finally confirmed cases were included in the study some cases were advice for biopsy and confirmed as tubercular on histopathology.

Result

During this period of 5 years 465 patients with cervical lymphadenopathy were diagnosed as tubercular lymphadenitis. The age of the patients ranged from 10 months to 80 years. The most common age group was 3rd decade followed by 2nd decade (Table 1). The youngest patient was 10 month whereas the oldest was 80 years old. Male to female ratio was 1:1.5. According to cytomorphological features smears were categorized into 4 patterns. (Table 2)

1. Smears showing only epithelioid cell granuloma and no necrosis (Fig. 1)
2. Caseating epithelioid granuloma –Showed epithelioid granulomas along with necrosis.(Fig. 2)
3. Caseating tubercular lymphadenitis - Smears with only caseous necrotic material (Fig. 3)
4. Smears with caseous necrotic material and inflammatory cells.(Fig. 4)

Two cases were confirmed on histopathology. We found epithelioid cell granuloma, langhans giant cell and necrosis(Fig. 5)

Ziehl-Neelsen (ZN) stain for AFB was done in all cases (Fig. 6) (Table 3). Maximum positivity was noted in caseating tubercular lymphadenitis and least positivity was noted in smears where there was only granulomas and no necrosis.

Table 2: Cytomorphological pattern

| Cytomorphological pattern | | No of cases n=465 | Percentage % |
|---------------------------|----------------------------|----------------------|--------------|
| 1 | Only granuloma | 141 | 30.3 |
| 2 | Granuloma with necrosis | 240 | 51.6 |
| 3 | Only necrosis | 60 | 12 |
| 4 | Necrosis with inflammation | 24 | 05 |

Table 1: Age distribution (n=465)

| Age group | No. of patients |
|-----------|-----------------|
| 0-10 | 30 |
| 11-20 | 96 |
| 21-30 | 135 |
| 31-40 | 84 |
| 41-50 | 57 |
| 51-60 | 30 |
| 61-70 | 18 |
| 71-80 | 15 |

Table 3: AFB Positivity

| Cytomorphological pattern | | No of cases n=465 | AFB positivity n=257 | Percentage % |
|---------------------------|----------------------------|----------------------|-------------------------|--------------|
| 1 | Only granuloma | 141 | 35 | 24.8 |
| 2 | Granuloma with necrosis | 240 | 160 | 66.6 |
| 3 | Only necrosis | 60 | 50 | 83.3 |
| 4 | Necrosis with inflammation | 24 | 12 | 50 |

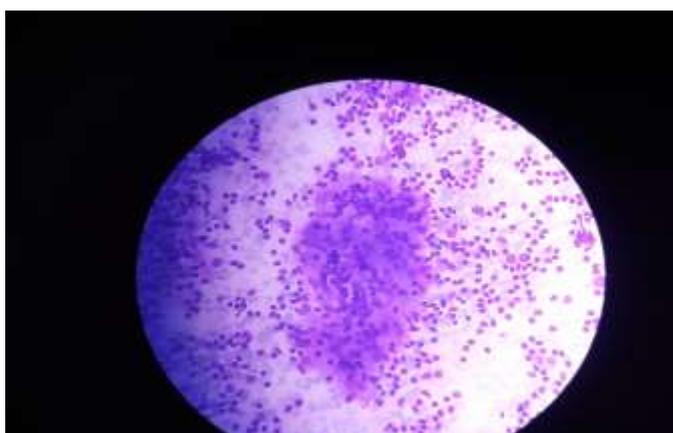


Fig. 1: Cytology smear on MGG staining showing epithelioid cell granuloma

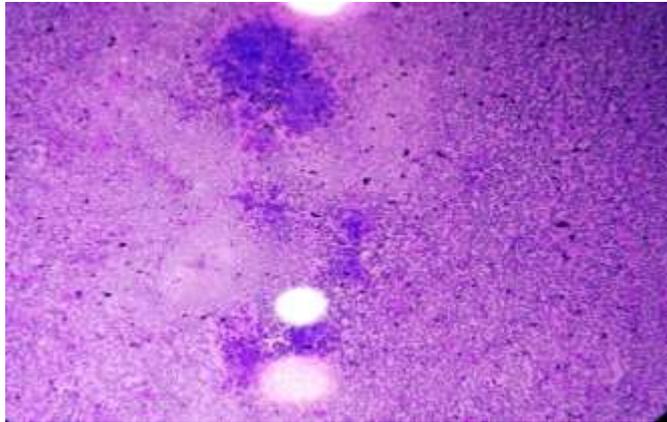


Fig. 2: Cytology smear on MGG staining showing epithelioid cell granuloma with caseation

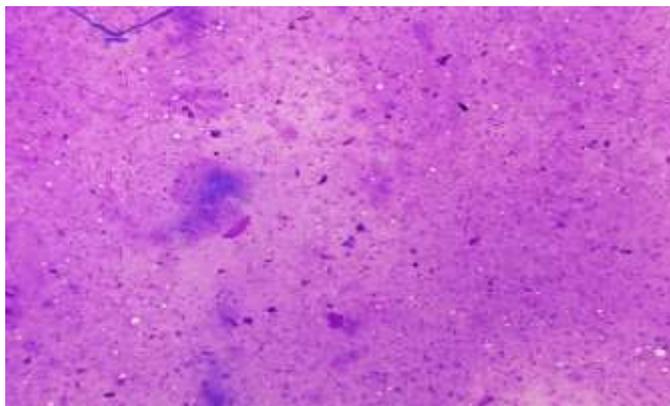


Fig. 3: Cytology smear on MGG staining showing caseating necrotic material only

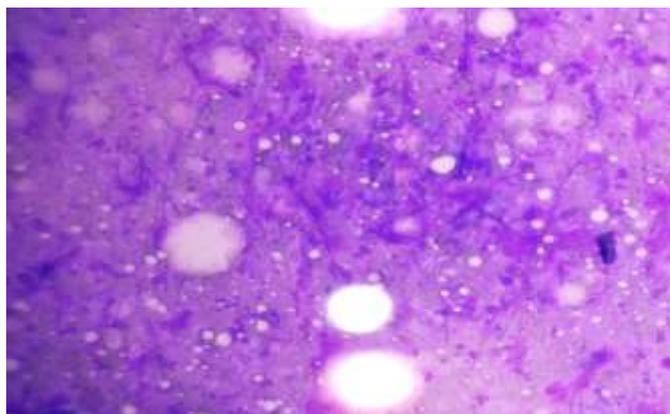


Fig. 4: Cytology smear on MGG staining showing caseating necrotic material and inflammation

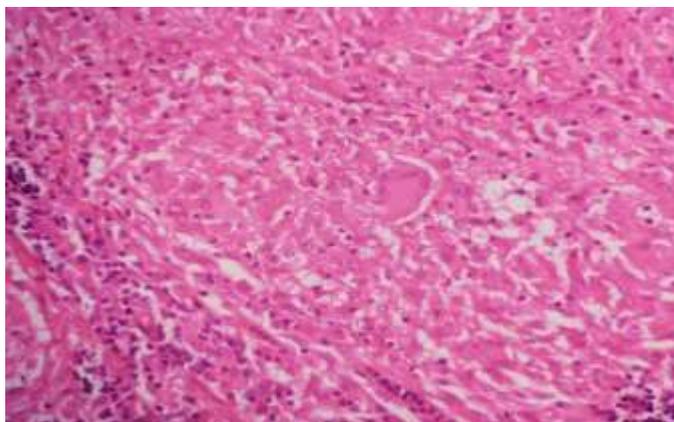


Fig. 5: Histology section showing epithelioid cell granuloma, giant cell, and necrosis



Fig. 6: Cytology smear on Z-N staining showing AFB positivity

Discussion

Tuberculosis is one of the commonest disease in India. It is prevalent in people of all the community and socioeconomic groups. But more commonly affected people are from the low socioeconomic group. Though it is curable, but if not detected early infected person can spread it to others. Infectivity of the disease declines with the starts of treatment and it becomes non infective in about 21 days. Moreover delay in diagnosis and late start of treatment may results in significant amount of morbidity as well as to some extent mortality also.

With the betterment of social condition and the widespread effective anti- tubercular program (DOT), the incidence of pulmonary tuberculosis has decline. Now days most of the new cases reports with extra pulmonary tuberculosis. Tubercular lymphadenopathy is the commonest form of extra pulmonary tuberculosis.^[1,2]

In the current study we found 72% of cervical tubercular lymphadenitis among all cases of enlarged cervical lymph nodes excluding the malignant ones. There are some studies which has reported higher incidence then ours.^[1] However study by Chawla et al,^[3] showed relatively lower incidence of tubercular lymphadenitis(31.7%). Studies done in Western country shows very low incidence of tubercular lymphadenitis(1.6%).^[4] The high incidence of

tuberculosis in our study is may be due the fact that our hospital gets patients exclusively from hilly areas of uttarakhand. This is a relatively low socioeconomic area as well as due to chill cold people here lives in close proximity to each other, which could be a cause of spreading of the disease.

In this study maximum number of patients were in the 3rd decade followed by 2nd decade. Similar pattern of age distribution was also reported in some studies.^[3,5] In the present study we found female more commonly affected with male to female ratio of 1:1.5. Higher number of female were in 3 and 4 decade. This may be related with low immunity and low socioeconomic status added with reproductive age group. Similarly female preponderance is also described in other studies.^[5-7]

Due to high prevalence of tuberculosis in India presence of epithelioid cell granuloma is considered as positive for tuberculosis.^[8] Similarly we also considered epithelioid cell granuloma as positive for tuberculosis in our study. Clinical and laboratory findings were correlated in all such cases.

In our study based on cytological features we categorized the lesions into four categories (Table 2). Nayak et al also described four cytological pattern of tubercular cytology.^[9] Das et al and Llatjos et al has described only three cytological patterns.^[10,11] In this study we found, maximum cases having cytological

patterns of granulomas with caseation followed by only epithelioid cell granulomas, only caseous necrotic material, lastly necrosis with inflammation. Similar pattern was also described by laishram et al.^[12] In our study overall AFB positivity was 55.2%. While Paliwal et al^[7] had 71%, and Bezabih et al^[13] found 59.5% AFB positivity. Comparatively low AFB positivity was reported by Chand et al (44.54%),^[5] and by Das Gupta et al 45.65%.^[14] A very low AFB positivity rate(19.6) was reported by Aggarwal et al.^[15] Highest AFB positivity in our study was in smears with only necrosis, similar to Chand et al. Followed by necrosis with granuloma and least positivity was in smears with only granulomas. All patients of only granulomas and necrosis with inflammation with no AFB on Z-N staining were correlated with other clinical, biochemical, hematological parameters and a repeat FNAC was done after a weak wherever needed. Two cases of suspicious tuberculosis were confirmed on histology. One patient was 6 years of age with single deep seated lateral upper cervical group of lymph node was diagnosed as reactive on cytology. Due to no response to antibiotic course and other laboratory finding in favor of tuberculosis exisional biopsy was done and histopathology confirmed it as tubercular lymphadenitis. Another patient was 64 years with large supra clavicular matted lymph nodes cytologically it showed only necrotic material. Due to age and large size histopathology was done sections were confirmed for tuberculosis. All of our patients responded well to anti tubercular treatment.

Conclusion

Fine needle cytology of tubercular lymph node is safe, simple and moreover conclusive,^[13,16] outdoor procedure in making diagnosis of tubercular lymphadenitis. Prompt diagnosis is helpful in starting early treatment, reducing infectivity, decreasing morbidity & mortality of tuberculosis. For making early diagnosis we can rely upon FNAC & Z-N staining for AFB findings along with supportive other laboratory tests. If facilities are available for AFB culture, it can be used for confirmation of mycobacterium tuberculosis in AFB negative cases. In our study AFB positivity was 55%, rest 45% did not showed AFB. But cytological pattern seen on smear was strongly suggestive of tuberculosis. We feel in developing countries, such as ours due to high prevalence of tuberculosis FNAC along with Z-N staining for AFB should kept as first line of investigation in tubercular lymphadenitis. As all patients responded to anti tubercular treatment, this show unnecessary biopsy can be avoided in tubercular lymphadenitis patients.

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