Utility of Fine Needle Aspiration Cytology in the Diagnosis of Extrapulmonary Tuberculosis: Study at a Tertiary Care Centre of Kashmir Valley

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ABSTRACT

Introduction: Tuberculosis(TB) can involve any organ system of our body. While pulmonary TB is most common presentation, extra pulmonary tuberculosis is also equally important problem. Cervical lymph nodes are the commonest site of involvement.This Extrapulmonary manifestation as peripheral lymphadenopathy or palpable intra-abdominal masses can be diagnosed by fine needle aspiration cytology (FNAC), a technique that is gaining increasing acceptance in the diagnosis of palpable masses and lymphadenopathies. Study objective was to determine the role of fine needle aspiration cytology (FNAC) in the diagnosis of extrapulmonary tuberculosis.

Materials and methods: The study was conducted in the department of pathology of Sher e Kashmir institute of medical sciences for a period of 4 years from 2013 to 2016. Patients were all subjected to FNAC. Aspirates were smeared on microscopic slides and stained using Geimsa stain(MGG). Smears showing features of tuberculosis were further stained with Ziehl Neelsen stains specific for acid-fast bacilli (AFB) of *Mycobacterium tuberculosis*. Family history of tuberculosis and previous history of anti tubercular treatment was simultaneously taken from these patients.

Results: 125 patients were diagnosed as extrapulmonary tuberculosis. They included 72 males (57.6%) and 53 females (42.4%). Aspirates were mainly from nodes (92%), breast (5.6%), skin (2.4%). Among the nodes involved, cervical nodes were mostly involved (80.8%). Positive family history of tuberculosis and prior treatment of tuberculosis was seen in 10 cases. Microscopically,epitheloid cell collection(granulomas) was seen in 98.4% cases with caseous necrosis seen in 41.6%. AFB was positive in 52% cases.remaining cases showed morphological features consistent with tuberculosis.

Conclusion: Although histopathology with culture has been the gold standard of diagnosing tuberculosis, fine-needle aspiration cytology (FNAC) as an inexpensive, less invasive procedure is useful for early diagnosis of tuberculosis and timely initiation of specific therapy.

Keywords: Fine Needle Aspiration Cytology, Extrapulmonary Tuberculosis

INTRODUCTION

Tuberculosis is most common and important infectious cause of death in our country.Tuberculosis can involve any organ system of our body. While pulmonary TB is most common presentation, extra pulmonary tuberculosis is also equally important problem. Cervical lymph nodes are the commonest site of involvement. Despite the decline of pulmonary tuberculosis in the western world, the incidence of cervical mycobacterial infections has remained relatively unaffected. In most instances of cervical lymphadenopathy the tubercle bacilli gain entrance through the ipsilateral tonsil. Tuberculous lymphadenitis presents as an enlarging, painless mass in a lymphatic area. The frequency of Extrapulmonary tuberculosis(EPTB) in patients with cervical lymphadenopathy is 78.63%.[1-4] This Extrapulmonary manifestation as peripheral lymphadenopathy or palpable intra-abdominal masses can be diagnosed by fine needle aspiration cytology (FNAC), a technique that is gaining increasing acceptance in the diagnosis of palpable masses and lymphadenopathies.[5-7]

Study objective was to determine the role of fine needle aspiration cytology (FNAC) in the diagnosis of extrapulmonary tuberculosis.

MATERIAL AND METHODS

The study was conducted in the department of pathology of Sher e Kashmir institute of medical sciences for a period of 4 years from 2013 to 2016. Patients were referred from the hospital wards and outpatient clinics. They were all subjected to FNA using a disposable 22-27-gauge needle and 20-ml disposable plastic syringe with the aid of a syringe holder. Aspirates were smeared on microscopic slides and stained using Geimsa stain(MGG). Smears showing features of tuberculosis were further stained with Ziehl Neelsen stains specific for acid-fast bacilli (AFB) of *Mycobacterium tuberculosis*. Family history of tuberculosis and previous history of anti tubercular treatment was simultaneously taken from these patients.

RESULTS

A total of 8760 patients were subjected to FNAC during this four year period (2013 to 2016). Out of these 125

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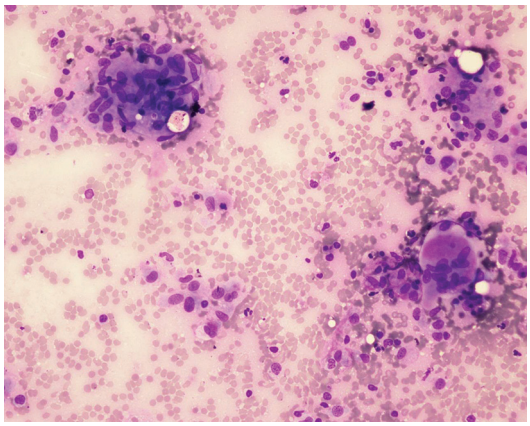

Figure-1: Photomicrograph showing epithelioid cell collection forming granuloma with multinucleated giant cell.(40X,MGG stain)

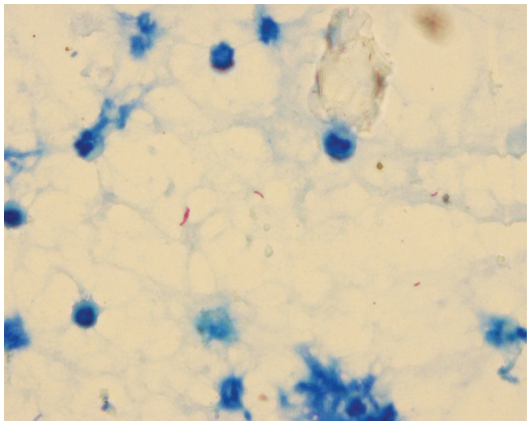

Figure-2: Conventional Ziehl-Neelson positive stain: Photomicrograph showing acid fast bacilli(100X,AFB stain)

Site	Frequency	Percentage
Cervical node	101	80.8
Axillary node	13	10.4
breast	7	5.6
skin	3	2.4
Inguinal node	1	0.8

Table-1: Sites of aspiration of patients

	Frequency	Percentage
Granulomas only	73	58.4%
Granulomas with necrosis	50	40%
Necrosis only	2	1.6%

Table-2: Microscopic features of cases

patients were diagnosed as extrapulmonary tuberculosis. They included 72 males (57.6%) and 53 females (42.4%). Aspirates were mainly from nodes (92%), breast (5.6%), skin (2.4%). Among the nodes involved, cervical nodes were mostly involved (80.8%) (Table1). Size of swellings ranged from 1 to 8 cm with average size of 1.5cm (198). Positive family history of tuberculosis and prior treatment of tuberculosis was seen in 10 cases. Microscopically, epitheloid cell collection (granulomas) was seen in in 98.4% cases (figure1) with caseous necrosisseen in 41.6% (table-2). AFB was positive in 52% cases (figure2). Remaining cases showed morphological features consistent with tuberculosis.

DISCUSSION

Tuberculosis is primarily considered a pulmonary disease; it has the potential to infect almost every organ system via lymphohaematogenous dissemination during the initial pulmonary infection.In our study extrapulmonary tuberculosis(EPTB) affected males more than females in a ratio of 1.4:1.Similar predominant male involvement was seen by *Ravikumar P* et al[8] in a study in which male were affected more then female in a ratio of 1.5:1. Studies conducted by Al-Hakeem MM et al[9], Kassimi FA et al[10] and Samaila MO et al[11] showed that men are more exposed to tuberculosis than women.In India and other developing countries lymph node tuberculosis continues to be the most common form of extra pulmonary tuberculosis.[12,13] Cervical lymph nodes are the most common extrapulmonary site of tuberculosis accounting for 80% in our study. Our finding is supported by earlier reports. Geldmacher H et al[14] conducted a study in which cervical node were most frequently involved accounting for 63.3%.Shafi ullah et al[15] in his study found lymph nodes to be the most common site for EPTB accounting for 66.4%

FNA diagnostic microscopic features include epithelioid cells, multinucleated giant cells, caseation evidenced by the presence of granular material and presence of acute inflammatory exudates, mainly polymorphs.[16,17] In our study, epithelioid cell collection (granulomas) was seen in in 98.4% cases while pathognomic caseation was seen in 41.6% similar to that reported in other studies.[18,19] In a study conducted by Samaila MO et al[11] epithelioid cells were seen in all specimens, with caseation seen in 56.3%. AFB positivity was seen in 52% cases in our study. Our finding are comparable to other studies. In a study conducted by Narang s et al[20] Acid-fast bacilli were detected only in 43.5% of the EPTB cases. AFB were seen in 43 (39.09%) cases by direct microscopy in a study conducted by Khan MA et al. [21] Samaila MO et al [11]conducted a study in which AFB positivity was demonstrated in 47.9% cases.

CONCLUSION

Although histopathology with culture has been the gold standard of

diagnosing tuberculosis, fine-needle aspiration cytology (FNAC) as an inexpensive, less invasive procedure is useful for early diagnosis of such tuberculosis and timely initiation of specific therapy.

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