



A STUDY OF CYTOPATHOLOGY IN DIAGNOSIS OF EXTRAPULMONARY TUBERCULOSIS IN TERTIARY CARE INSTITUTE OF HISAR DISTRICT OF HARYANA

Pathology

Dr. Sulekha Singh

Dr. Pravin

Pawane*

*Corresponding Author

Dr Karandeep
Singh

ABSTRACT

Background: Fine-needle aspiration cytology (FNAC) is a rapid, easy to perform, safe, cost-effective procedure which helps in screening of peripheral Extrapulmonary tubercular lesions. Cytological features are categorized under 4 major cytologic patterns, i.e. Type I: epithelioid granuloma without necrosis, Type II: epithelioid granuloma with necrosis, type III: necrosis without epithelioid granuloma, Type IV: AFB positive suppurative lesions. **Aim:** To study the frequency and distribution of extrapulmonary tubercular lesions detected on FNAC. **Materials and methods:** This is a retrospective and descriptive study which included all reported cases of extra pulmonary tuberculosis from Jan 2019 to March 2020 which were referred for FNAC to cytology unit in department of Pathology, Maharaja Agrasen Medical College. The cytopathological findings of 214 cases of extra pulmonary tuberculosis were analysed. **Results:** Out of 214 cases, 86 (40.2%) cases were male and 128 (59.8%) were female. Age distribution ranged from 10 month to 78 years of age. Cervical lymph nodes were the most common site of extrapulmonary tuberculosis. Out of the 4 microscopic categories Granulomas with caseous necrosis was the most common pattern presented in 56.6% of cases. Ziehl-Neelsen staining showed overall AFB positivity of 67.7%.

KEYWORDS

INTRODUCTION

Tuberculosis primarily affects lungs, but it has the potential to infect almost every organ system via lymphohaematogenous dissemination during the initial pulmonary infection. In India and other developing countries lymph node tuberculosis continues to be the most common form of extra pulmonary tuberculosis and delayed diagnosis often increases the morbidity and mortality.^[1-4] Extrapulmonary tuberculosis can be diagnosed early by fine needle aspiration cytology (FNAC), a technique which is gaining increasing acceptance in the diagnosis of palpable masses and lymphadenopathies which are common manifestations of extrapulmonary tuberculosis.^[5-8] Because of its low cost, early availability of results, simplicity and minimal trauma and complications, FNAC is considered as valuable diagnostic test for diagnosing extra pulmonary tuberculosis.^[9]

Objectives of the study

The objective of this retrospective study is to evaluate the frequency and distribution of different extrapulmonary tubercular lesions detected on FNAC in patients presented in the Department of Pathology, Maharaja Agrasen Medical College, Agroha.

MATERIALS

This is a 2 year and 3 months analysis of the cytological smears and samples received in a tertiary care centre between Jan 2000 to March 2012.

METHOD

The present study titled 'Role of cytopathology in diagnosis of extrapulmonary tuberculosis' is carried out in the Department of Pathology, in Maharaja Agrasen Medical College, Agroha from January 2019 to March 2021. 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 Haematoxylin and Eosin, Field's, Geimsa stain (MGG). Smears showing features of tuberculosis were further stained with Ziehl Neelsen stains specific for acid-fast bacilli (AFB) of Mycobacterium tuberculosis.

Inclusion criteria

All the cases with cytomorphological features of Granulomas, caseous necrosis and suppurative lesions which were ZN stain positive.

Exclusion criteria:

Suppurative lesion which were ZN stain negative

RESULTS

During the period from January 2019 to March 2021, total 214 patients

were diagnosed as extrapulmonary tuberculosis. The study included 214 patients out of which 86 males (40.2%) and 128 females (59.8%).

Most affected age group with extrapulmonary tuberculosis was 21 to 40 years with 124 (58 %) cases, followed by 0 to 20 years with 62 (29%). 21 (9.8%) cases were from 41 to 60 years and 7 cases were from 61-80 years.

Most common affected site was cervical lymph nodes (83.1%) followed by axilla 10 (4.7%), breast 7(3.3%), back 6 (2.8%), chest (2.3%), thigh (0.9%), inguinal lymph node (0.9%), nape of neck (0.5%), foot (0.5%), wrist (0.5%) and knee (0.5%) skin (2.4%). which 84 (40.7%) were males and 122(59.3%) were females with age range from 10 months to 78 years. Most common site of extra pulmonary tuberculosis was cervical lymph nodes 178 (84.3%) cases followed by Axilla 10 (4.7%), Back 6 (2.8%), Chest 5(2.3%) and Breast 7(2.3%), Thigh 2 (0.9), Inguinal lymph node 2 (0.9). Other uncommon sites include nape of neck, foot, wrist and knee with 1 (0.5%) case each.

Microscopically epithelioid cell granulomas with caseous necrosis were seen in 121 (56.6%) cases. Granulomas without necrosis were seen in 57 (26.6%) cases, only caseous necrosis was seen in 17 (7.9%) cases and acute suppurative inflammatory infiltrate was seen in 19 (8.9 %) cases. AFB was positive in 145 (67.7%) cases. The remaining had cytological features consistent with tuberculosis.

Table 1: Sex Distribution of positive cases

Sex	Total no. of cases	Percentage
Males	86	40.2%
Females	128	59.8%

Table 1: Age Distribution of positive cases

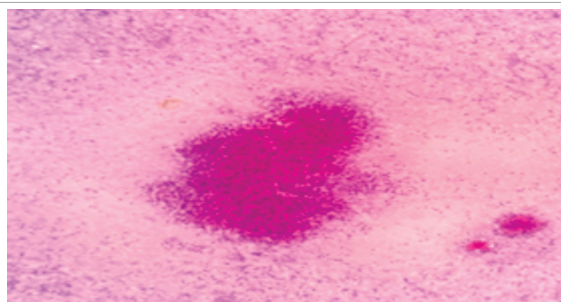
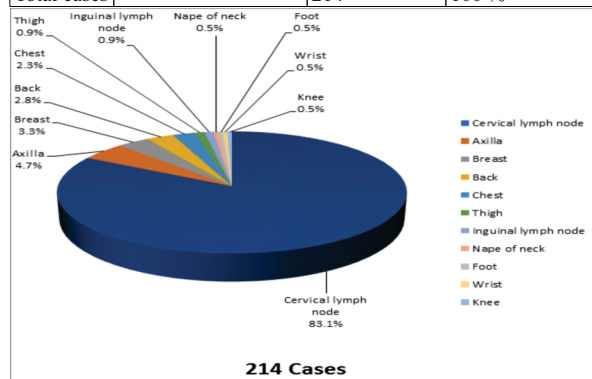
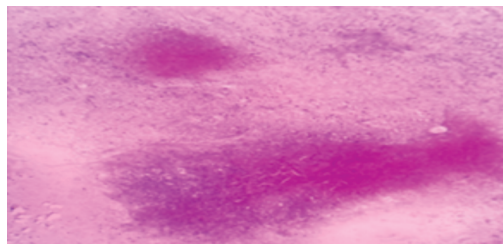
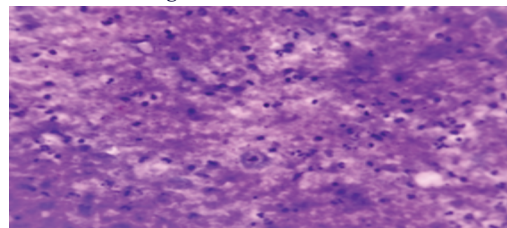
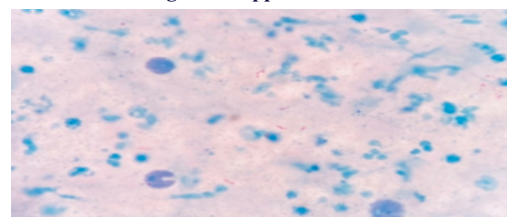
Age group	Number of cases	Percentage
0-20	62	29 %
21-40	124	58 %
41-60	21	9.8 %
61-80	07	3.2 %
Total	214	100 %

Table2: Distribution of sites of extrapulmonary tuberculosis

Type	Microscopy	Frequency	Percentage
I	Granuloma only	57	26.6%
II	Granuloma + caseous necrosis	121	56.6%
III	Caseous necrosis only	17	7.9%
IV	Acute suppuration	19	8.9%

Table3: Cytopathological Patterns

No	Site	Frequency	Percentage
1.	Cervical lymph nodes	178	83.1%
2.	Axilla	10	4.7%
3.	Breast	7	3.3 %
4.	Back	6	2.8%
5.	Chest	5	2.3%
6.	thigh	2	0.9 %
7.	inguinal lymph node	2	0.9 %
8.	nape of neck	1	0.5 %
9.	foot	1	0.5 %
10.	wrist	1	0.5 %
11.	Knee	1	0.5 %
Total cases		214	100 %

**Figure : Smear showing granuloma only****Figure : Smear showing caseous necrosis****Figure : Smear showing acute suppurative inflammation.****Figure : Smear showing AFB****DISCUSSION:**

A major public health concern, which still remains and contributes to the world epidemiology is tuberculosis. Tuberculosis (TB) though primarily affects the lungs it may also affect the other parts of the body and referred as extra pulmonary (EPTB). Despite the brief decline in TB notifications observed around the months corresponding to India's two major COVID-19 waves, the National Tuberculosis Elimination Programme (NTEP) reclaimed these numbers. Accordingly, 2021 witnessed a 19% increase from the previous year in TB patients' notification—the total number of incident TB patients (new and relapse) notified during 2021 were 19,33,381 as opposed to that of 16,28,161 in 2020. Out of all the cases 28% of the cases were of extrapulmonary tuberculosis¹⁰. Cervical lymph nodes are the most common extrapulmonary site of tuberculosis accounting for 83.1% in our study. Our finding is supported by earlier reports. Yasin et al⁶, Geldmacher H et al¹¹ conducted a study in which cervical nodes were most frequently involved accounting for 80% and 63.3% respectively. Other common sites included Axillary lymph nodes and Breast. We found the youngest patient was 10-month-old and the oldest was 78 yrs of age. These figures are in close comparison with Rajwanshi A et al¹¹ study where youngest was 1.5 year of age and oldest were 72-year-old. We observed that there is female preponderance among tubercular lesions with M:F 1:1.4. Similar preponderance was also recorded by Shrivastava et.al¹ and Rajwanshi A et al¹² founded 1:2.27 and 1:1.3 respectively.

In our study, most common cytomorphological pattern observed was epithelioid granuloma with necrosis, seen in 56.6% cases. This was also the commonest pattern in the study by Bhatta S et al¹³, Khanna A et al¹⁴, Bhattacharya S et al¹⁵ and Prasoon D et al¹⁶. They reported this pattern in 53.17%, 50.5%, 69.4% and 44.2% of cases respectively. The presence of caseous necrosis without epithelioid granuloma was the least common pattern in our study, seen in 7.9% cases. Bhatta S et al¹³ and Bhattacharya S et al¹⁵ reported this pattern in 8.73% cases and 17.7% cases respectively. Only granulomas were seen in 26.6% cases while acute suppurative inflammation with ZN stain positive for AFB cases were 19 (8.9%). ZN stain for AFB was positive in 67.7% of cases.

CONCLUSION:

FNAC is a reliable, quick and economical investigation in diagnosis of peripheral Extra pulmonary tuberculosis. Despite certain limitations it provides a high degree of accuracy in diagnosing tuberculosis. Prompt diagnosis is helpful in reducing morbidity and mortality of tuberculosis.

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