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DIAGNOSIS OF TUBERCULAR LYMPHADENITIS AND ABSCESS: A SPECTRUM OF CYTOMORPHOLOGICAL FINDINGS AND INCIDENCE OF ACID FAST BACILLI POSITIVITY

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ABSTRACT

Context: Tuberculosis persists to be a major health burden world wide. Extrapulmonary tuberculosis most commonly presents as tubercular lymphadenitis. Fine needle aspiration cytology and Ziehl Neelsen staining are valuable and cost effective tools for diagnosing this health problem in a large population. **Aims:** To describe the cytomorphological findings in cases suspected to be of tubercular aetiology on Giemsa stained smears and to find the incidence of acid fast bacilli positivity in these cases. **Settings and Design:** It was a prospective type of study done in a Secondary care level hospital of Delhi, India. **Methods and Material:** Over a period of 16 months, 498 cases which were cytologically suspected to be of tubercular aetiology on Giemsa stained smears were included in this study. These cases were further subjected to evaluation for acid fast bacilli positivity on Ziehl Neelsen stained smears. **Results:** Total number of cases included in the study were 498. Out of these 174 (35%) were male and 324 (65%) were female patients. The most common age group was 11-20 years. Cervical region was the most common site involved. The most common cytological finding seen in smears was abscess (polymorphs with necrosis). Acid fast bacilli (AFB) positivity was seen in overall 363 (73%) cases. **Conclusions:** Tuberculosis still persists to be a major health problem in developing countries like India. Clinicians rely on confirmatory pathological and Ziehl Neelsen stain findings for commencing Anti Tubercular Treatment. Fine needle aspiration cytology (FNAC) accompanied by AFB positivity are less invasive, accurate and cost effective tools for diagnosing tuberculosis, therefore becoming the primary diagnostic modalities of choice in secondary care level hospitals.

KEYWORDS: Tuberculosis, Extrapulmonary, Cytomorphology, Ziehl Neelsen.

INTRODUCTION

Tuberculosis persists to be a major health concern in developing countries like India.[1] The most common extrapulmonary manifestation of tuberculosis is lymphadenitis.[2] FNAC is widely accepted diagnostic modality for tuberculosis as it is known to be accurate, sensitive, specific and cost effective.[3] This study was conducted to describe the cytomorphological findings and to find the incidence of acid fast bacilli positivity in suspected cases. The overall rate of AFB positivity is high in our study as compared to other cytomorphological studies reported till now in literature, therefore making it of even higher clinical significance.

MATERIALS AND METHODS

This study was a prospective type of study carried out over a period of 16 months in a secondary care government hospital in Delhi. Total 2632 number of FNAC were performed in the department of pathology during this period. Out of these, 498 cases were included in this study which were suspected to be of tubercular aetiology on the basis of cytomorphological findings. These comprised of cases of lymphadenopathies and soft tissue swellings. In each of these selected cases, factors like patients age, sex, location of swelling, cytomorphological findings (giemsa stain) and AFB (Ziehl Neelsen stain) positivity were studied. FNAC was performed in the pathology department by a 24 gauge needle with or without aspiration by a 20 ml syringe and 2-3 smears were prepared for each case. Out of these one slide each was stained by giemsa and Ziehl Neelsen stain and extra slides were stored for further staining if required according to the microscopic findings. The Giemsa stained smears were examined for epithelioid cell granuloma, caseous necrosis, langhans type of giant cells or any features of abscess. Ziehl Neelsen stained smears were examined for AFB.

RESULTS

There were total of 498 cases included in this study which had cytomorphological findings suspected to be of tubercular eitiology. The most common age group of patients was 11-20 years (Table 1). The youngest patient included in this study was 20 days old and the oldest patient was 85 years of age. Female preponderance was noted in this study (Table 2). The most common site involved was cervical region (including supraclavicular region) comprising of 395 (79.3%) cases followed by 33 (6.6%) cases of axillary region involvement (Table 3). Also seen were 13 (2.6%) cases of inguinal lymphadenopathy (Fig. 1). One (0.2%) case of breast abscess was also seen. On microscopy the most common cytological finding was abscess (Fig. 2) seen in 208 (42%) of cases followed by epithelioid cell granuloma without necrosis in 112 (22.4%) cases (Fig. 3) and only necrosis without epithelioid cell granuloma in 92 (18.4%) of cases (Fig. 4 and 5). Least common finding was epithelioid cell granuloma with necrosis seen in 86(17.2%) cases (Table 4). Also seen were Langhans type of giant cells in few smears [45 (9%) cases]. It was seen that in total 363 out of 498 cases, stain for AFB was positive. (Table 4). Therefore, the overall positivity rate of AFB was 73%. The highest number of cases with AFB positivity were the cases having abscess (polymorphs with necrosis) in giemsa stained smears that is 139 (28%) cases. Whereas the percentage positivity was more in smears having only caseous necrosis without epithelioid cell granuloma (87 out of 92 cases that is 94.6%) (Table 4).

TABLES

Table 1: Distribution of cases according to age group.

Age group (years)	No of patients
0-10	65
11-20	198
21-30	151
31-40	49
41-50	21
51-60	08
>60	6
Total	498

Table 2: Distribution of cases according to sex.

Sex of Patients	No of patients
Male	174 (35%)
Female	324 (65%)
Total	498 (100%)

Table 3: Distribution of cases according to anatomical site involved.

Anatomical site	No. of cases
Cervical	395 (79.3%)
Axillary	33 (6.6%)
Inguinal	13 (2.6%)
Chest	13 (2.6%)
Back	10 (2%)
Hand	6 (1,2%)
Thigh	5 (1%)
Preaural, Arm, Flank	4 (0.8%) each
Gluteal, wrist, foot	2 (0.4%) each
Scalp, breast, subcostal, leg, epigastric	1 (0.2%) each
Total	498 (100%)

Table 4: Distribution of cases according to various cytomorphological findings and AFB positivity.

Cytomorphological findings	AFB positive	AFB negative	Total
Epithelioid cell granuloma with necrosis	71 (14.2%)	15 (3%)	86 (17.2%)
Epithelioid cell granulomas without necrosis	66 (13.2%)	46 (9.2%)	112 (22.4%)
Necrosis only without epithelioid cell granuloma	87 (17.4%)	05 (1%)	92 (18.4%)
Polymorphs with necrosis with or without Epithelioid cell granulomas	139 (28%)	69 (14%)	208 (42%)
Total	363 (73%)	135 (27%)	498 (100%)

Table 5: Percentage of AFB positivity in different studies.

Studies	AFB positivity (%)
Prasoon D et al (2014)[7]	67.6
Gupta R et al (2015)[4]	65
Masilamani S et al (2015)[5]	55.7
Vimal S et al (2016)[6]	54.7
Present study	73

Illustrations and Figures

Figure 1: Inguinal region swelling with a draining sinus.

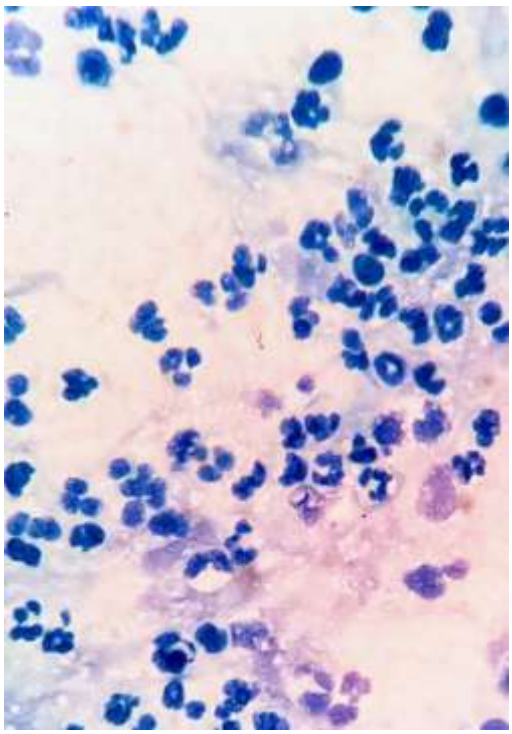

Figure 2: AFB in a background of sheets of polymorphs with scant necrotic material (Ziehl Neelsen stain 1000x).

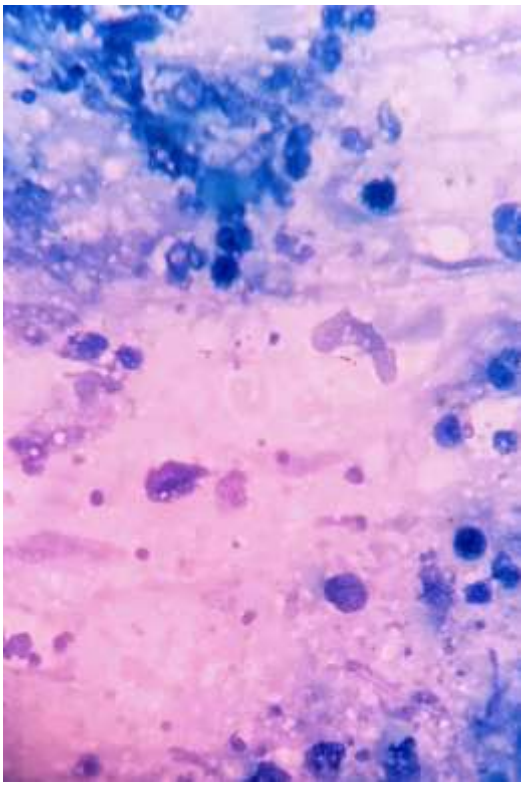

Figure 3: AFB in epithelioid cell granuloma with scant necrotic material (Ziehl Neelsen stain 1000x).

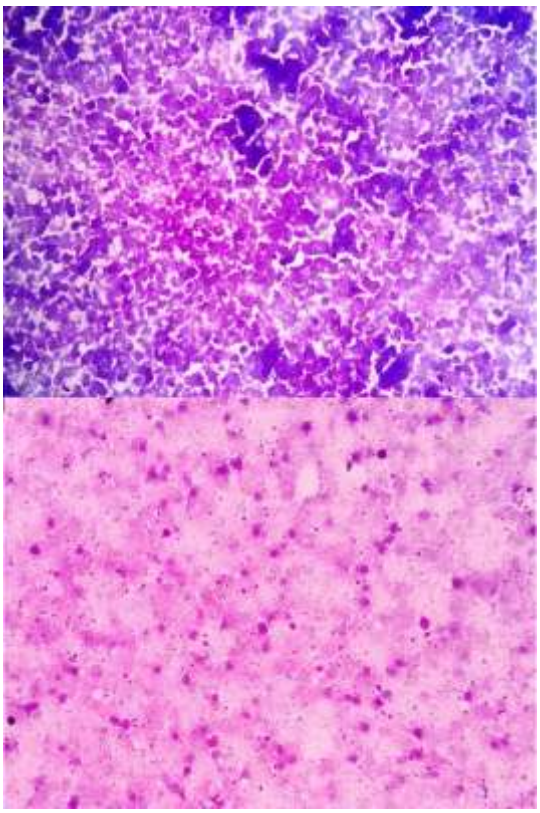

Figure 4: Necrotic material in FNAC smears (Giemsa 400x).

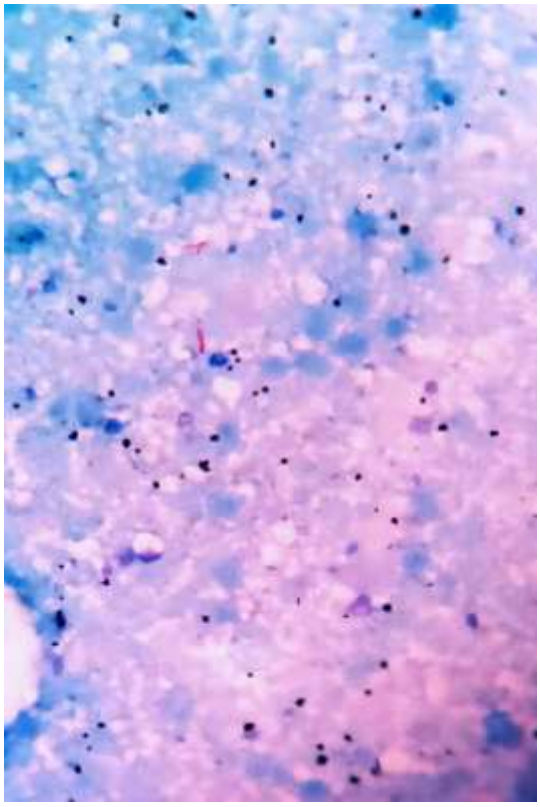

Figure 5: AFB in background of necrotic material (Ziehl Neelsen stain 1000x).

DISCUSSION

The present study was done to describe the cytomorphological findings in cases suspected to be of tubercular aetiology on giemsa stained smears and to find the incidence of acid fast bacilli positivity in these cases. The sample size of the study was 498 cases.

In the present study the most common age group of patients having cytomorphological findings suspected to be tuberculosis was 11-20 years. Whereas in the study conducted by Gupta R et al[4] the most common age group of patients was 21-30 years (45% cases).

Female preponderance (65%) was noticed in the present study which was similar to study conducted by Gupta R et al[4] where females accounted for 61.2% of total sample size.

The most common site involved in our study was cervical region comprising of 395 (79.3%) cases, which was in concordance with the studies done by Gupta R et al[4] (70%), Masilamani S et al[5] (97.2%) and Vimal S et al[6] (38%).

Microscopically the most common cytological findings seen in studies done by Gupta R et al[4] and Masilamani S et al[5] were epithelioid cell granuloma with necrosis seen in 52.5% and 48.1% of cases respectively. In study done by Vimal S et al[6] (38%) the most common finding was epitheliod cell granuloma without necrosis seen in 34.1% of cases closely followed by epithelioid cell granuloma with necrosis seen in 33.3% of the cases. In our study the most common finding was abscess (polymorphs with necrosis) seen in 208 (42%) of cases followed by epithelioid cell granuloma without necrosis in 112 (22.4%) cases.

The overall positivity rate of AFB was 73% in the present study which was significantly greater than the studies conducted by Gupta R et al[4], Masilamani S et al[5], Vimal S et al[6] and Prasoon D et al.[7] (Table 5).

The studies conducted by Gupta R et al[4], Masilamani S et al[5] and Vimal S et al[6] had similar cytomorphological selection criteria as our study that is cases with Epithelioid cell granuloma with necrosis, Epithelioid cell granulomas without necrosis, Necrosis only without epithelioid cell granuloma and Polymorphs with necrosis with or without Epithelioid cell granulomas.

It was also noticed that AFB was positive maximally in cases having abscess in giemsa stained smears that is 28% in our study which was in concordance with study done by Masilamani S et al[5] where highest percentage of AFB positivity was also seen in aspirates containing purulent and necrotic material.

Our study is of high clinical significance and interest as the overall AFB positivity rate is significantly higher than other similar studies. It further emphasizes that FNAC accompanied by Ziehl Neelsen stain for diagnosis of tuberculosis are accurate and cost effective tools in a developing country like India at secondary care level hospitals. It also warrants that a careful and patient search should be made for AFB in all cases of abscesses and other cytomorphological findings which are suggestive of tuberculosis.

CONCLUSION

Tuberculosis still persists to be a major health problem in developing countries like India. Clinicians rely on pathological and Ziehl Neelsen stain findings for starting the treatment of tuberculosis. FNAC accompanied by AFB positivity are less invasive, accurate and cost effective tools for diagnosing tuberculosis, therefore becoming the primary diagnostic modalities of choice in secondary care level hospitals.

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