

ORIGINAL RESEARCH

Correlation of cellular findings in lymph node aspirates with bacillary positivity in patients with tuberculous lymphadenitis

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ABSTRACT

Background: Tubercular lymphadenitis is a prevalent cause of lymph node enlargement in developing countries. Fine needle aspiration cytology (FNAC) plays a crucial role in diagnosing and preventing unnecessary surgeries. This study aims to correlate cellular components and necrosis in lymph node aspirates with bacillary positivity, comparing data with similar studies. **Material and methods:** The research involved one hundred clinically suspected tuberculosis lymphadenopathy cases of all ages and sexes referred by Dayanand Medical College clinicians. Brief history and clinical findings were recorded on proformas. **Results:** The study showed the involvement of lymph nodes by tuberculous pathology in children 0-14 years age group (19%) and the ratio of children and adult patients 15-45 years was found to be 1:3.89. In this study female to male ratio was 1.22:1 with female patients slightly more affected with maximum incidence seen in the age group of 15-30 years. The study showed that the maximum AFB positivity (76.9%) was observed in the smears with cytomorphology Type III. Type I and Type II were positive for AFB in 3.33% and 34.1% smears respectively. **Conclusion:** Tuberculosis is a major global health problem, with India accounting for 30% of cases. Tuberculous lymphadenitis ranks highest among extra-pulmonary manifestations. The study advocates FNAC for diagnosis, sparing patients invasive and costly biopsies.

Key words: Fine needle aspiration cytology, Tubercular, Lymphadenitis

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INTRODUCTION

Despite Robert Koch discovering the causative organism in 1882, tuberculosis persists as a global health issue. Mycobacterium tuberculosis primarily affects the lungs but can also impact various body tissues. Diagnosis relies on FNAC, histopathology, and bacteriological studies. FNAC provides a quick, safe, and cost-effective alternative, emphasizing epithelioid granulomas and acid-fast bacilli for etiological confirmation.¹⁻⁴

TB lymphadenitis is usually more common in females and in younger age groups in contrast to pulmonary TB which is more common in males and in the older age group and a peak age of onset of 20-40 years. There are various diagnostic modalities available for the diagnosis of TB lymphadenitis viz fine-needle aspiration cytology (FNAC), histopathological examination excised lymph nodes, culture, Ziehl-Neelsen (ZN) staining for acid fast Bacilli (AFB), imaging studies, and molecular tests. Even though culture is considered as gold standard for the

diagnosis, FNAC to be used as the initial diagnostic test in suspected cases of TB as it has excellent sensitivity and specificity, and also it is a simple and less expensive outpatient diagnostic procedure.⁰

MATERIALS & METHODS

The study was carried out on one hundred patients having lymphadenopathy suspected to be suffering from tuberculous pathology, visiting various departments of Dayanand Medical College, Ludhiana. The patients included were from all ages and both sexes. They were subjected to Fine Needle Aspiration Cytology in the Cytology Section, Department of Pathology, Medical College Ludhiana and Ziehl - Neelsen staining of aspirated smear made was done in AFB section, Department of Microbiology, Dayanand Medical College Ludhiana

RESULTS

The study showed the involvement of lymph nodes by tuberculous pathology in children 0-14 years age

group (19%) and the ratio of children and adult patients 15-45 years was found to be 1:3.89. In this study female to male ratio was 1.22:1 with female patients slightly more affected with maximum incidence seen in the age group of 15-30 years. This study showed that the cervical group of lymph nodes were affected the most making 86% with maximum incidence seen in age group of 15-30 years , axillary 4% involved in the age group of 0-14 years , post -auricular 3% , and inguinal 7% involved in the age group of 15-30 years. Maximum patients showed matted lymphnodes i.e 54% , followed by multiple discrete 32% , single discrete 11% and sinuses and cold abscesses 3%. In this study , 68% patients revealed thick , cheesy granular material , 15% patients revealed blood admixed material and 17% patients revealed purulent aspirate. In the present study , the predominant morphological appearance observed was Type II (44%) i.e epithelioid granulomas with caseation necrosis , followed by Type I (30%) i.e epithelioid granulomas without caseation necrosis. The three appearances (Type I : Type II : Type III) were in the ratio of 1.36:2:1. The study showed Type I morphology predominant in the age group of 0-14 years , Type II and Type III morphology predominant in the age group above 15 years and elderly patients showed mainly Type II morphology. The study showed overall AFB positivity was 36% (out of 100 smears). The study showed that the maximum AFB positivity (76.9%) was observed in the smears with cytomorphology Type III. Type I and Type II were positive for AFB in 3.33% and 34.1% smears respectively

DISCUSSION

India accounts for one-fifth of the global incidence of tuberculosis (TB). Every year 1.98 million cases are reported from India as compared to global annual incidence of 9.4 million. Lymphadenitis is the most common extra pulmonary manifestation of TB. Tubercular lymphadenitis is seen in nearly 35% of extra pulmonary TB (Extra Pulmonary TB constitutes 15-20% of all cases of TB). Further in patients with human immunodeficiency virus (HIV) infection extra pulmonary TB constitutes almost 53-62% of TB. Numerous diagnostic methods such as fine needle aspiration cytology (FNAC), culture, polymerase chain reaction and histopathological examination of excised node have been advocated for confirmation of tubercular lymphadenitis. However, FNAC is a routinely done cytological technique in diagnosing tubercular lymphadenitis as it has sensitivity and specificity of 88-96%. FNAC is economical and rapid as compared with culture studies (considered as gold standards but time consuming and require skill) and polymerase chain reaction (expensive, needs training).⁸⁻¹²

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cases of cytologically proven tuberculous lymphadenitis were retrieved and analyzed retrospectively between March 2012 and March 2015 for three different cytomorphological patterns (epithelioid granuloma without necrosis [pattern A], epithelioid granuloma with necrosis [pattern B], and necrosis without epithelioid granuloma [pattern C]) and bacillary loads on Ziehl-Neelsen stain (ZN) for AFB. Pattern A through C was observed in 40 (18.9%), 102 (48.1%), and 70 (33%) cases, respectively. AFB positivity was found in 2 (5%) cases of pattern A, 62 (60.8%) cases of pattern B, and 54 (77.1%) cases of pattern C. The highest percentage of AFB positivity (64.7%) was observed in aspirate containing purulent/pus and caseous/cheesy material. The overall AFB positivity was seen in 55.7% (118/212) cases. On grading of AFB positivity, Grade 1+ was observed in 29.7%, Grade 2+ was observed in 28.8%, and Grade 3+ was observed in 41.5% cases. FNAC is a sensitive, simple, convenient, safe, minimally invasive procedure to diagnose tuberculous lymphadenitis.¹⁴

CONCLUSION

Tuberculosis is a major global health problem, with India accounting for 30% of cases. Tuberculous lymphadenitis ranks highest among extra-pulmonary manifestations. The study advocates FNAC for diagnosis, sparing patients invasive and costly biopsies.

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