

Study of Incidence and Cytomorphological Patterns of Tubercular Lymphadenitis in a Secondary Care Level Hospital of Jammu Region

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ABSTRACT

Background: Tuberculosis is still a global health concern. Most common presentation of extra pulmonary tuberculosis is tubercular lymphadenitis. In our setting, keeping huge burden of tuberculosis in mind, clinicians have to rely on pathological diagnosis of enlarged lymph nodes i.e. cytomorphology with acid fast staining in diagnosing these cases so that diagnosis and management of such cases can be initiated quickly. Fine needle aspiration cytology (FNAC) of lymph nodes has been a simple, rapid and cost effective procedure for diagnosis of various causes of lymphadenopathies. Our study is the first one in its type in J&K reporting the incidence and pattern of Tubercular Lymphadenitis in secondary level health care hospital.

Aims: To report the incidence and describe various cytomorphological patterns of tubercular lymphadenitis in secondary care level Government Hospital, Gandhi Nagar, Jammu.

Material and Methods: In a study period of two and a half years, two hundred and thirty one consecutive enlarged lymph nodes were aspirated and subjected to cytomorphological evaluation with Papanicolaou(PAP), Giemsa, and Ziehl- Neelsen (Z-N) stained smears.

Results: Incidence of tubercular lymphadenitis was reported as 34.6% (C.I 0.285-0.411). Around 80% of cases were in the second to fourth decades of life with mean age as 27.08 years and male to female ratio of 1:1.6. Cervical region was the most common site of involvement with multiple unilateral lymphadenopathy as the most common presentation. The most common cytological picture was epithelioid granulomas with caseous necrosis (52.5%). Overall AFB positivity was seen in 65% cases.

Conclusions: FNAC has proved as a very useful first line of investigation in patients presenting with lymphadenopathy, especially in secondary care centres.

Key words: Cytomorphological patterns, FNAC, Incidence, Secondary level Hospital, Tubercular lymphadenitis, Z-N staining.

INTRODUCTION

Tuberculosis (TB) remains a worldwide public health problem. India is the highest TB burden country in the world in terms of absolute number of incident cases that occur each year. It accounts for one fourth of the estimated global incident TB cases in the world. [1] Considerable people die or lose productive years of their life despite the fact that TB has been accorded a top priority in Millennium Development Goals (Goal no.6) [2]. Extra-pulmonary TB comprises 10% - 15% of the total TB cases with Tubercular Lymphadenitis as the most common form. In developing countries, almost two third of the cases of lymphadenopathy are due to tuberculosis. [3]

Demonstration of Acid Fast Bacilli (AFB) in smears from extra pulmonary sites is often difficult because of low bacillary load and thus poses considerable challenge in diagnosis. Fine Needle Aspiration Cytology (FNAC) has been one of the most preferred techniques in developing countries like India where patient load is always high as it is safe, cost effective and minimally invasive outpatient procedure [4] and provides a better alternative to excision biopsy [5]. Culture studies and Polymerase Chain Reaction (PCR) in terms of time and cost. [6]

The present study was conducted in Government Hospital Gandhi Nagar, a secondary level referral centre in Jammu next in hierarchy to Government Medical College, Jammu a tertiary level health care centre (apex institute) with the aim to estimate the incidence of tubercular lymphadenitis in our setting, describe the spectrum of various cytomorphological patterns of Tubercular lymphadenitis and report the AFB positivity with cytomorphological patterns.

MATERIAL AND METHODS

This prospective study was carried out at Government Hospital Gandhi Nagar, Jammu over a period of two and a half years from January 2013 to June 2015. Two hundred and thirty one consecutive enlarged lymph nodes were aspirated for cytological examination after patient referral from clinicians. However in each case detailed history and clinical examination was performed. Factors like patient's age, gender, clinical symptoms, location of lymph nodes, gross examination of aspirate and cytomorphological patterns were studied. Aspiration was done on OPD basis using 22 gauge needle and 10 ml plastic syringe with a detachable syringe holder (Franzen Handle). In each case, three alcohol fixed

smears were prepared ,first smear was stained with PAP stain, second with Giemsa stain ,third one was stained with Zeihl –Neelson (ZN) stain and an additional slide was kept unstained for any further required stain. The smears revealing features of tubercular lymphadenitis were categorised as per different cytomorphological patterns, epithelioid granulomas with caseous necrosis, epithelioid granulomas without necrosis, necrosis only without epithelioid granulomas and polymorphs with necrosis with or without epithelioid granulomas.^[7]

DISCUSSION

The present study aimed to find out the incidence and description of cytomorphological pattern of tubercular lymphadenitis among patients presenting with lymphadenopathy in secondary care centre; Government Hospital Gandhi Nagar, Jammu. Out of two hundred and thirty one consecutive lymph nodes aspirated from patients referred to pathology section, smears of eighty lymph nodes showed cytomorphological features suggestive of Tubercular Lymphadenitis. The incidence thus reported was 34.6 %.(C.I 0.28-0.41).Comparable rates were reported by Chawla e tal ^[8] , Ahmed etal ^[9] , Tilak et al ^[10] . However, comparatively higher incidence was reported by Paliwal et al ^[11] (55%), Chand P et al ^[12] (56.99%) and Rana S etal ^[13] could be due to the fact that these studies were conducted in tertiary care centres catering to large population and incidence rates also vary according to geographic region. ^[14] In our study maximum numbers of patients were present in the age group 21-30 years and majority were in second to fourth decades of life. Mean age was 27.08 years. Similar pattern of age distribution was reported by Paliwal etal, ^[11] Ergete etal ^[5] , Purohit et al ^[15], Chand P ^[12] and Gupta AK ^[16] . However Mahopatra ^[17] had reported maximum patients in second decade followed by third decade. Youngest patient in our study was 5 months old and oldest was 67 years old. In study by Ahmed etal ^[9] the youngest patient was 2 years old and oldest was 95 years old whereas Paliwal etal ^[11] reported youngest patient of 4 years old with 63 years old as oldest. Lesser number of cases were observed in extreme age groups. Female patients suffered more from tubercular lymphadenitis as compared to males. Fatima etal, ^[18] along with other authors ^[5] ^[15] ^[12] also reported female preponderance. However Ahmed etal,^[9] Rajshekar etal ^[19] reported higher incidence in males. Higher incidence in females may be due to poor nutritional status and overall lower standards of living in developing countries.

In our study, cervical lymph nodes were most commonly involved (70%). In studies by Sharma etal ^[21] and authors ^[5] ^[11] ^[12] majority of lymph nodes involved were also cervical Multiple unilateral lymphadenopathy was most common

presentation (49%) which corroborated with Aggarwal etal ^[22]. However, Chand P ^[12] reported single palpable lymph node as the most common presentation. Sharma etal ^[21] observed similar pattern of findings among study conducted among paediatric age groups.

Most common cytomorphological pattern found in our study was epithelioid granulomas with caseous necrosis (52.5%).However Paliwal etal ^[11] reported necrosis only without epithelioid granulomas as the most common cytomorphological pattern in 39.2% patients. Gupta Etal ^[16] reported epithelioid clusters with or without langhans giant cells with necrosis as most common pattern .Chand P ^[21] had reported caseous necrotic material with epithelioid giant cell granulomas and giant cells as the most common pattern. Overall AFB Positivity was 65% and maximum positivity was present in polymorphs with necrosis with or without epithelioid granulomas (75%). Comparable rates of AFB positivity was reported by Ergete etal [5] .However Paliwal etal^[11] reported AFB positivity in 71% among 234 cases. Aggarwal ^[22] reported AFB positivity in 19.6% among 138 cases. However studies by various authors ^[5] ^[11] ^[12] ^[16] had reported maximum AFB positivity in necrosis only without epithelioid granulomas.

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RESULTS

Out of two hundred and thirty one consecutive lymph nodes aspirated ,eighty cases showed features of Tubercular lymphadenitis and hence incidence was reported as 34.6%(C.I 0.285-0.411).Around 80% of cases were in the second to fourth decades of life with male to female ratio of 1:1.6 with mean age 27.08 years (Table 1) . The youngest patient was five month old and oldest was 67 years old. Around 70% of cases had cervical presentation followed by axillary (12.5%) and inguinal (2.5%) (Table 2) .None of the case had generalised lymphadenopathy. Among cases with cervical presentation, majority (49%) had multiple unilateral lymphadenopathy followed by single palpable lymphnode (41%) and only 10% had multiple bilateral lymphadenopathy. Out of lymph nodes aspirated around 40% had purulent material, followed by blood mixed material in 35% and cheesy necrotic material was aspirated in 25%. Cytomorphological pattern in more than half of cases (52.5%) was epithelioid granulomas with caseous necrosis (with or without giant cells) followed by necrosis only without epithelioid granulomas in 28.7% cases, 13.8% had epithelioid granulomas without necrosis, and polymorphs with necrotic picture with or without epithelioid granulomas was

present only in 5% of cases (Table 3). Overall AFB positivity was seen in 65% cases and out of that maximum AFB positivity of smears was present in cases with polymorphs with necrosis (75%) and least (54.5%) in cases with epithelioid granulomas without necrosis.

Table 1: Distribution of Cases of Tubercular Lymphadenitis According to Age and Sex

Age Groups (Years)	Males N (%)	Females N (%)	Total N (%)
0-10	03 (42.9%)	04(57.1%)	07(8.7%)
11-20	09 (60%)	06(40%)	15(18.7%)
21-30	08 (22.2%)	28(77.8%)	36(45%)
31-40	05 (41.7%)	07(58.3%)	12(15%)
41-50	03 (75%)	01(25%)	04(5%)
51-60	01 (33.3%)	02(66.7%)	03(3.8%)
61-70	02 (66.7%)	01(33.3%)	03(3.8%)
TOTAL	31(38.8%)	49(61.2%)	80(100%)

Table 2: Distribution of Cases According to Involved Anatomical Sites

Anatomical Site	No. of Cases	%
CERVICAL	56	70%
AXILLARY	10	12.5%
SUBMANDIBULAR	7	8.75%
SUBMENTAL	5	6.25%
INGUINAL	2	2.5%
TOTAL	80	100%

Table 3: Distribution of Cases According To Various Cytomorphological Patterns and AFB Positivity

Cytomorphological Pattern	AFB Positive N (%)	AFB Negative N (%)	Total N (%)
Epithelioid Granulomas With Caseous Necrosis	26 (61.9%)	16 (38.1%)	42 (52.5%)
Epithelioid Granulomas With Out Necrosis	06 (54.5%)	05(45.5%)	11 (13.8%)
Necrosis Only Without Epithelioid Granulomas	17(73.9%)	06 (26.1%)	23 (28.7%)
Polymorphs With Necrosis With Or Without Epithelioid Granulomas	3(75%)	01(25%)	4 (5%)
Total	52(65 %)	28(35%)	80(100 %)

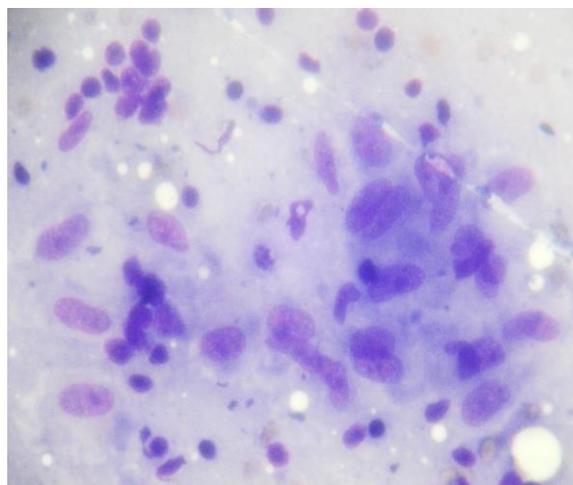


Fig. 1: Well formed epithelioid cell granuloma admixed with lymphocytes (Giemsa, 40x)

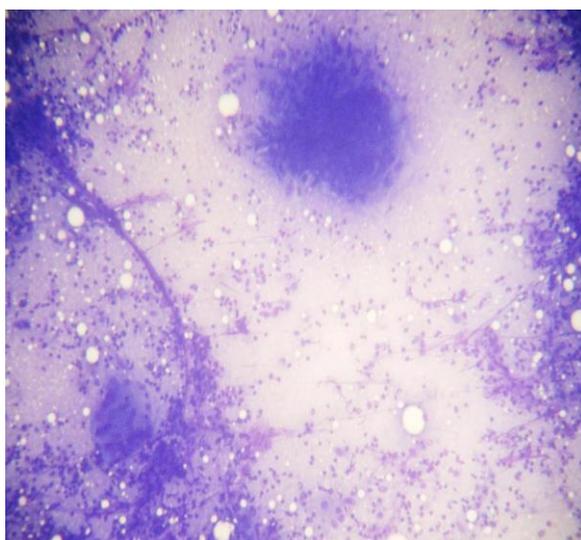


Fig. 2: Multinucleated epithelioid cell granuloma along with Langhans giant cell (Giemsa, 20x)

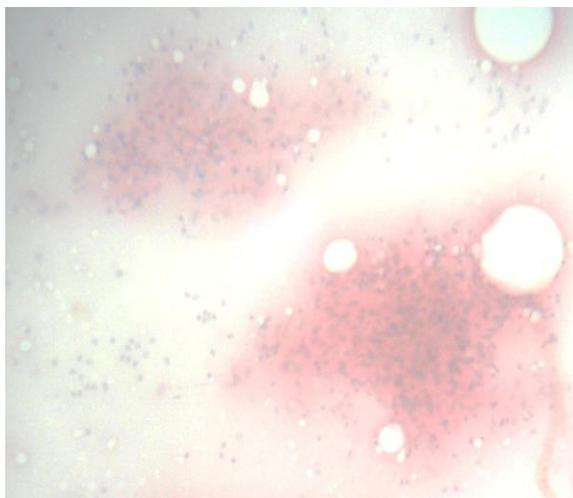


Fig. 3: Well formed epithelioid cell granulomas (PAP, 20x)

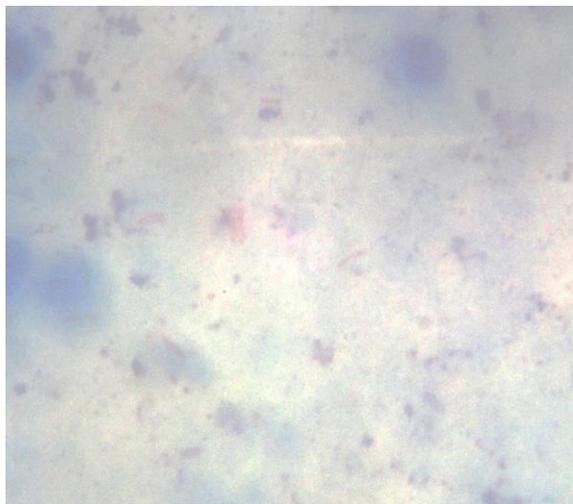


Fig. 4: Numerous acid fast bacilli seen in a necrotic background (ZN stain, 100x)

CONCLUSION

Used first by Dudgeon and Patrick in 1927 for diagnosis of tubercular lymphadenitis^[23] FNAC has been proved very useful first line investigation in patient presenting with lymphadenopathy especially in secondary care centres where advanced facilities and expensive facilities like culture and Polymerase Chain reaction (PCR) are not available. In remote areas patients can be diagnosed and put to treatment immediately without much delay thus decreasing the infectivity of disease.

ABBREVIATIONS:

AFB: Acid Fast Bacilli
 C.I: Confidence Interval
 FNAC: Fine Needle Aspiration Cytology
 OPD: Out Patient Department
 PAP: Papanicolaou
 PCR: Polymerase Chain Reaction
 TB: Tuberculosis
 ZN: Ziehl-Neelsen

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