Cytomorphological patterns in clinically suspicious cases of tubercular lymphadenitis

Swadha Sharma¹*, Charu Kiran Agarwal², Abhilasha Maru³, Aishwarya Mehul Patel⁴

¹,²,³ Second year Resident, ²Third year Resident
Department of Pathology, Smt. B. K. Shah Medical Institute and Research Centre, Sumandeep Vidyapeeth Deemed to be University, At. & Po. Piparia, Ta. Waghodia, Dist. Vadodara, Gujarat, India
*Corresponding author email: sswat11@gmail.com

Abstract

**Background:** Lymphadenitis is the most frequent form of extrapulmonary tuberculosis. The diagnosis of tuberculous lymphadenitis remains challenging in spite of the availability of various diagnostic tools.

**Aim:** To study the cytomorphological patterns in clinically suspicious cases of Tubercular Lymphadenitis.

**Materials and methods:** A prospective study of the FNAC in 151 patients of suspected tubercular lymphadenitis was conducted. FNAC smears were stained with Leishman-Geimsa (dry), H&E and Pap (wet). Smears were examined and findings were grouped according to cytomorphological patterns. Cytomorphological diagnosis suggestive of tubercular lymphadenitis was made. For demonstration of AFB conventional Ziehl-Neelson (ZN) stain was used.

**Results:** 97 out of 151 cases were cytologically suggestive of tubercular lymphadenitis with following patterns: Necrotising granulomatous (25.1%), Granulomatous (15.2%) and Necrotising (23.9%). 21 out of 151 cases were cytologically diagnosed as Suppurative lymphadenitis. Remaining 33 out of 151 cases were of Chronic non-specific/Reactive lymphadenitis. 61 out of 151 cases were positive for AFB with ZN stain. 58 out of 97 cytologically suggestive tubercular
lymphadenitis cases were AFB positive with ZN stain. Out of 21 cases of suppurative lymphadenitis, 3 showed AFB positivity on ZN staining.

**Conclusion:** In suspicious cases of tuberculosis, positivity for AFB aids to diagnosis as cytology of FNAC lymph node shows varied morphology.

**Key words**
Tubercular lymphadenitis, Cytomorphological pattern, TB.

**Introduction**
Lymphadenitis is the most frequent form of extrapulmonary tuberculosis. The diagnosis of tuberculous lymphadenitis remains challenging in spite of the availability of various diagnostic tools. Conventional methods, like ZN staining and culture for *Mycobacterium tuberculosis*, are traditionally used in the diagnosis of tuberculous lymphadenitis. However, none of these methods alone can diagnose all cases of TB lymphadenitis. Standard diagnostic algorithm for tuberculous lymphadenitis in India recommends FNAC with ZN staining for acid fast bacilli (AFB) in clinically suspected cases [1].

**Aim and objectives**
- To study the cytomorphological patterns in clinically suspicious cases of Tubercular Lymphadenitis.

**Materials and methods**
A prospective study of the FNAC in 151 patients of suspected tubercular lymphadenitis was conducted. FNAC smears were stained with Leishman-Geimsa (dry), H&E and Pap (wet). Smears were examined and findings were grouped according to cytomorphological patterns into:

- Group I – Suppurative Lymphadenitis
- Group II – Necrotising Granulomatous Lymphadenitis
- Group III - Granulomatous Lymphadenitis
- Group IV - Necrotising Lymphadenitis
- Group V – Chronic non-specific/ Reactive Lymphadenitis (Table - 1, Graph - 1).

Cytomorphological diagnosis suggestive of tubercular lymphadenitis was made using criteria following 3 patterns:
1. Epitheliod granuloma with Necrosis.
2. Epitheliod granuloma only.
3. Necrosis only.

For demonstration of AFB conventional Ziehl-Neelson (ZN) stain was used.

**Results**
97 out of 151 cases were cytologically suggestive of tubercular lymphadenitis with following patterns: Necrotising granulomatous (25.1%), Granulomatous (15.2%) and Necrotising (23.9%). 21 out of 151 cases were cytologically diagnosed as Suppurative lymphadenitis. Remaining 33 out of 151 cases were of Chronic non-specific/ Reactive lymphadenitis (Table - 1).

**Table 1**: Cytomorphological patterns.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Cytomorphological patterns</th>
<th>No. of cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Suppurative Lymphadenitis</td>
<td>21</td>
<td>13.9%</td>
</tr>
<tr>
<td>2.</td>
<td>Necrotising Granulomatous</td>
<td>38</td>
<td>25.1%</td>
</tr>
<tr>
<td>3.</td>
<td>Granulomatous</td>
<td>23</td>
<td>15.2%</td>
</tr>
<tr>
<td>4.</td>
<td>Necrotising</td>
<td>36</td>
<td>23.9%</td>
</tr>
<tr>
<td>5.</td>
<td>Chronic non-specific / Reactive lymphadenitis</td>
<td>33</td>
<td>33%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>151</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Table 2**: ZN staining.

<table>
<thead>
<tr>
<th>Z.N staining</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>61.40%</td>
</tr>
<tr>
<td>Negative</td>
<td>90.60%</td>
</tr>
</tbody>
</table>
61 out of 151 cases were positive for AFB with ZN stain (Table - 2). 58 out of 97 cytologically suggestive tubercular lymphadenitis cases were AFB positive with ZN stain. Out of 21 cases of suppurative lymphadenitis, 3 showed AFB positivity on ZN staining (Graph - 1, Pictomicrograph - 1).

**Graph – 1:** Cytomorphological pattern.

![Graph](image1)

**Pictomicrograph – 1:** AFB bacilli in ZN stain.

![Pictomicrograph](image2)

**Discussion**

Conventional Ziehl-Neelson method for AFB plays a significant role in definite diagnosis of tuberculous lymphadenitis. However, its major disadvantages are low sensitivity, time consumption and oil immersion use. In the present study, 3 out of 21 cases of suppurative lymphadenitis were positive on ZN stain which is comparable to the study by Annam V, et al. [2]. This could be due to loss of bacilli amidst necrotic debris in ZN staining. 24 out of 38 cases of necrotizing granulomatous lymphadenitis, 6 out of 23 cases of granulomatous lymphadenitis and 28 out of 36 cases of necrotising lymphadenitis were AFB positive on ZN stain which is similar to the results of Bhardwaj S, et al. [3].

**Conclusion**

In suspicious cases of tuberculosis, positivity for AFB aids to diagnosis as cytology of FNAC lymph node shows varied morphology.

**References**
