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Incidence of Tuberculous Lymphadenitis

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Key words:
Tuberculosis, Lymphadenitis, FNAC, Ziehl-Neelsen's staining.

ABSTRACT

Background: Nepal is a high-burden country for tuberculosis (TB). About 45% of the total population is infected with TB and an estimated 20,000 new infectious cases of TB are reported each year.

Objectives: The purpose of this study is to determine the incidence of tuberculous lymphadenitis in comparison with other diagnosis of enlarged head and neck nodes by fine needle aspiration cytology (FNAC).

Methods: This is a retrospective study of 126 patients with neck swellings in Gandaki Medical College, Pokhara. FNAC was performed. The slides were then stained and evaluated under the microscope.

Results: This study showed that lymphadenitis of tuberculous nature (necrotizing granulomatous lymphadenitis consistent with tuberculosis and granulomatous lymphadenitis suggestive of tuberculosis) were found in 35 patients out of 126 (27.78%) which was the second most common diagnosis and other non tuberculous lesions (reactive lymphadenitis, non Hodgkin’s lymphoma, metastatic carcinoma to lymph nodes and lymphangioma) were found in 91 patients (72.22%).

Conclusions: Our study showed that incidence of tuberculous lymphadenitis in this region of Nepal is not very rare and is easy to be diagnosed due to access to very easy procedure like FNAC. We believe this information would be useful in many clinical settings and facilitate pathological reporting and focused clinical investigation under the current Nepalese perspective especially in the rural areas. Considering the frequency of tuberculous lymphadenitis of the head and neck region in our part of Nepal we also believe that in the future, this data will help further to diagnose and treat the patients timely and accurately.

INTRODUCTION

Nepal is a high-burden country for tuberculosis (TB). About 45% of the total population is infected with TB and an estimated 20,000 new infectious cases of TB are reported each year. Tubercular lymphadenopathy is the most common extra pulmonary form of tuberculosis and cervical lymphnodes are the most commonly affected group of nodes. The purpose of this study was to determine the incidence of tuberculous lymphadenitis in enlarged head and neck nodes by FNAC.

Clinical examination and often diagnostic aids like radiology and blood tests fail to resolve the vexing problem regarding the nature of mass. Fine Needle Aspiration Cytology (FNAC) is a procedure where by small amount of tissue or cells is aspirated from a pathological lesion with the help of fine disposable syringe. Lymph node aspiration is of great value for the diagnosis of lymphadenitis, lymphomas and metastatic carcinoma. Sensitivity and specificity of FNAC have been documented by several studies in the past. This procedure was first done by Griey and Gray in 1904, in patients with sleeping sickness. The experiment of fine needle aspiration (FNA) developed gradually, until 1921, when Guthrie tried to correlate FNA results with various disease process. The main benefit of FNAC is to avoid the need for surgical biopsy, which requires local or general anesthesia, increased hospital stay and costs.
OBJECTIVES
To determine the incidence of tuberculosis affecting the neck nodes.

Design: Retrospective study

Place and duration of study: This study was carried out in Gandaki Medical College, Prithivi Chowk, Pokhara, Nepal. It started from January 2008 till 2010 January, lasting two years.

METHODS

All the patients presenting with palpable cervical lymph nodes (CL) in the Hospital were recruited in the study regardless of age and sex. The patients with enlarged CL but having contraindication of FNAC (Bleeding disorder, cardio respiratory failure) were excluded from the study. All patients were asked detail history pertaining to neck swelling and relevant questions to the etiological factors and past family history of tuberculosis. Apparatus used included 10 ml disposable plastic syringe 22–25 gauge, 0.6–1.0 mm external diameter disposable needle 3.98 cm and 8.8 cm long with or without stylet, antiseptic sponges, sterile gauze pads, microscopic glass slides.

All FNAC were carried out by pathologists. A 23-gauge needle was connected to a 10 ml syringe mounted on a syringe holder. The palpable cervical node was fixed with one hand and needle was inserted into the lymph node and a full suction pressure was applied. The tip of the needle was moved around at varying angles and depths and with constant negative pressure (never emerging outside the skin). Before final withdrawal, the negative pressure was released prior to the needle emerging from the skin. The cytological material was transferred on to glass slides. The aspirated material was then smeared on 2 - 4 slides, fixed in 95% ethanol and air dried to be stained with papanicoloau and May-Grunwald Giemsa stains respectively. The slides were then evaluated by the pathologist. Suspicious cases for tuberculosis in microscopic findings were subjected to Zeihl Neelsen stain for AFB (TB). The data analysis was performed using SPSS version 17.

RESULTS
In this study 126 patients were involved. Among them males were 67 (53.17%) and females 59 (46.83%). Mean age was 24.93 years (SD±20.0). Age ranged from 1 year to 86 years. The age distribution of the study population is shown in Figure 1.

Patients with age group 0 - 20, 21 - 40, 41 - 60 and 61 - 80 and above 80 years were 53.97%, 29.37%, 7.14%, 7.94% and 1.59% respectively (Fig 1). Most of the patients were between the age 0 - 20 years. Males were higher in frequency (n=67 ; 53%) than females (n=59; 47%).

FNAC was done from various sites. From neck lymph nodes it was 93 (74%), supraclavicular lymph nodes 9 (7%), submandibular lymph nodes 9 (7%), submental lymph nodes 6 (5%), preauricular lymph nodes 5 (4%) and postauricular lymph nodes 4 (3%) as shown in the figure 2.

This study showed that lymphadenitis of tuberculous origin were found in 35 patients out of 126 (27.78%) and other nontuberculous lesions were found in 91 patients (72.22%), as shown in figure 3.

Among the lymphadenitis of tuberculous nature, 19 patients were diagnosed with necrotizing granulomatous lymphadenitis consistent of tuberculosis (15.1%) and granulomatous lymphadenitis suggestive of tuberculosis was 16 (12.7%) of all the 126 patients. Reactive lymphadenitis 78 (61.9%), non Hodgkin’s lymphoma 5 (4.0%), metastatic carcinoma to lymph nodes 7 (5.6%) and lymphangiomia was 1 (0.8%) were other diagnosis made in the cytopathological study among these patients (Table 1).

Cases in microscopy showing caseous necrosis, epithelioid cell granulomas, Langerhans giant cells in a lymphoid background were diagnosed as Necrotising Granulomatous Lymphadenitis (NGL) whereas cases with all the above findings but devoid of caseous necrosis were diagnosed as granulomatous lymphadenitis. Few of the NGL cases showed positivity for acid fast bacilli in Ziehl Neelsen Stain (Fig 4 and 5).

Fig 1: Age group of patients

Fig 2: Sites of FNAC of cervical lymphnodes (n=126)

Fig 3: Incidence of Tuberculous and Nontuberculous diseases
Incidence of Tuberculous Lymphadenitis

**DISCUSSION**

This study was carried out to find out the relative frequencies of tuberculosis in the lymph nodes in the neck in our region. Diagnostic FNAC was performed. This technique is safe simple and quick with a low complication rate and helps to select people preoperatively for surgery. In the study by KUM in 1947, FNAC for cytological evaluation of neck masses was first reported. In most studies an accuracy rate of FNAC in diagnosing lymph node lesions of 85% to 94.4% has been reported, while sensitivity of FNAC in the detection of tubercular lymphadenopathy was reported to have 77%. Sensitivity, specificity and diagnostic accuracy was reported to be 97%, 97.5% and 97.4% respectively in yet another study in which, cytomorphological features of epithelioid and giant cells with caseation necrosis was associated with higher percentage of AFB positivity. Early diagnosis is particularly important in tubercular lymphadenopathy due to its curability.

Our study also showed that more than half the cases (61.9%) were reactive lymphadenitis which is similar with the study by Mohammad R, Azadeh R, which in which 58.9% of the lesions were reactive lymphadenitis. AlAlwan et al. and Narang et al. also showed reactive lymphadenitis in 55.3% and 61.6% of the lymph nodes, respectively.

Non Hodgkin's Lymphoma was seen only in 1 case.

**CONCLUSIONS**

Our study showed that incidence of tuberculous lymphadenitis in this region of Nepal is not very rare and is easy to be diagnosed due to access to very easy procedure like FNAC. It has reported the frequency of tuberculous lymphadenitis in one of the Western part of Nepal. It also showed different patterns of cytological diagnosis on FNAC of enlarged cervical lymph nodes were most commonly affected (74%). Males (53.17%) were more affected than females (46.83%) and the male to female ratio was 1 : 0.88. We found that majority of patients in our study (53.97%) were from 0 - 20 years age while in similar study by Shaky G showed that age group 21 - 40 were mostly affected. Necrotising granulomatous lymphadenitis, consistent with tuberculosis along with granulomatous lymphadenitis suggestive of tuberculosis was found to be the second most common pathology in our study (27.8%). Similarly, the studies by Tariq et al., ElHag et al., Kamal F et al. and Muhammad J et al. showed that the incidence of tuberculosis of neck nodes were 36%, 21%, 13% and 26.1% respectively. A comparison between these studies are illustrated in the Table 2.

**Table 2 : Comparison of results with other studies**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Current study</th>
<th>Tariq et al</th>
<th>El Hag et al</th>
<th>Kamal F et al</th>
<th>Muhammad J et al</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.of patients</td>
<td>126</td>
<td>50</td>
<td>225</td>
<td>196</td>
<td>42</td>
</tr>
<tr>
<td>Duration of study (years)</td>
<td>1.5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>1</td>
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<tr>
<td>TB Lymphadenitis (%)</td>
<td>27.7</td>
<td>36</td>
<td>21</td>
<td>13</td>
<td>26.1</td>
</tr>
<tr>
<td>Reactive Lymphadenitis (%)</td>
<td>69.1</td>
<td>18</td>
<td>33</td>
<td>16.6</td>
<td></td>
</tr>
<tr>
<td>Malignant neoplasms (%)</td>
<td>4</td>
<td>14</td>
<td>13</td>
<td>11</td>
<td>4.6</td>
</tr>
</tbody>
</table>

In most studies an accuracy rate of FNAC in diagnosing lymph node lesions of 85% to 94.4% has been reported while sensitivity of FNAC in the detection of tubercular lymphadenopathy was reported to have 77%. Sensitivity, specificity and diagnostic accuracy was reported to be 97%, 97.5% and 97.4% respectively in yet another study in which, cytomorphological features of epithelioid and giant cells with caseation necrosis was associated with higher percentage of AFB positivity. Early diagnosis is particularly important in tubercular lymphadenopathy due to its curability.

Our study also showed that more than half the cases (61.9%) were reactive lymphadenitis which is similar with the study by Mohammad R, Azadeh R, which in which 58.9% of the lesions were reactive lymphadenitis. AlAlwan et al. and Narang et al. also showed reactive lymphadenitis in 55.3% and 61.6% of the lymph nodes, respectively.

Non Hodgkin's Lymphoma was seen in 7 (5.6%) in our study. Similar finding was shown in study by Haque MA 6 (5.6%). Metastatic carcinoma to lymph nodes was found in 5.6% cases. In another large study, nasopharyngeal carcinoma was reported as most frequent primary site in cervical metastatic lymphadenopathy. In the diagnosis of metastatic malignancy, the lymph node FNAC is as rewarding as the surgical biopsy. Lymphangioma was seen only in 1 case.
nodes among Nepalese population in this region. Despite the limitations, FNAC provides a reliable and convenient method for the initial management of cervical lymphadenopathy specially in case of tuberculosis as it is medically treatable disease. One can always avoid surgical procedures and come to the correct and timely decision of treating medically treatable diseases. We believe this information would be useful in many clinical settings and facilitate pathological reporting and focused clinical investigation under the current Nepalese perspective. Looking at the results of frequency of tuberculosis in the neck region in our part of Nepal we also believe that in the future this data will help further to diagnose and treat the patients timely.

Conflicts of interest

The authors declare that they have no competing interests.

REFERENCES


