Cytologic patterns of lymph node diseases in Hawassa University referral hospital, southern Ethiopia

Gemechu Ameya Buli, Fekade Yerakly Lukas

Keywords: Fine needle aspiration cytology, Lymph node disease, Southern Ethiopia

ABSTRACT

Background: Lymphadenopathy is becoming common pathological problem in most part of the world. There is a wide variation in the pattern of disease in different ethnic groups and in various countries. The knowledge of the pattern of these diseases in a given geographical region is essential for making a confident diagnosis of suspecting a disease. Objective: The aim of this study was to assess the cytological patterns of lymph node diseases in patient attended Hawassa University referral hospital. Methods: A five years retrospective study was conducted on fine needle aspiration cytology report of patient referred to pathology laboratory of Hawassa University referral hospital from September, 2009 to September, 2014. Results: A total of 1,067 lymph nodes were aspirated in the study period. Cervical lymphadenopathy was the most frequent (48.82%) followed by submandibular (22.77%) lymph nodes. The second decade was the most affected age group while age group above 60 was less frequent. Tuberculosis lymphadenitis was highest (48.82%), chronic non-specific lymphadenitis (20.33%), reactive (16.21%), pyogenic abscess (5.99%) and the rest were malignant. Conclusion: Lymphadenopathy can be associated with a wide range of disorders however; tuberculosis lymphadenitis is the most common cause of enlarged lymph node in the study area.

1. Introduction

Lymph nodes comprise an important part of the defense system of the human body, as filters or traps for foreign particles. Lymphadenopathy refers to lymph nodes which are abnormal in size, number or consistency [1]. The cause may range from an infectious process to a malignant disease [2, 3]. It is difficult to diagnose the cause of lymphadenopathy on the basis of the history and physical examination alone. Fine needle aspiration cytology (FNAC) is the best method of diagnosing enlarged lymph nodes in resource limited setup. It plays a vital role due to its cost-effectiveness, simplicity, accuracy, completely safe and quick method for diagnosis of lymphadenopathy and it reduces the need for surgical biopsy [4].

Lymphadenopathy is becoming common pathological problem in most part of the world and a number of studies have been done to assess the extent of the problem. It is a clinical manifestation of regional or systemic disease which serves as an excellent clue to the underlying disease [5]. There is a wide variation in pattern of disease in different ethnic groups and in various countries [6-9]. The knowledge of the pattern of lymphadenopathy in a given geographical region is essential for making a confident diagnosis of suspecting a disease in that particular location.

There are different conditions which present with lymph node enlargement; however the most common cause for enlargement of regional lymph nodes appears secondary to tuberculosis lymphadenitis, malignancies, reactive hyperplasia, Hodgkin lymphoma, non-Hodgkin lymphoma, pyogenic abscess and other chronic inflammation [10]. The presentation of lymph node enlargement have characteristic feature according to the causative factor and they may present as acute painful swellings due to infections or as chronic painless swelling. The aim of this study was to assess the cytological patterns of lymph node diseases in patient attended in Hawassa University referral hospital in five years period.

2. Materials and Methods

Cytological pattern of Lymphadenopathy of FNAC reports were retrospectively assessed from September, 2009 to September, 2014 in Hawassa University referral hospital pathology laboratory. This hospital provides medical service to population estimated to fifteen million in southern part of Ethiopia and also provides practical training to medicine and health science students. This referral hospital is located in Hawassa city. Hawassa is the capital city of the Southern nation nationalities and peoples regional state located at 275 km south of Addis Ababa, capital city of Ethiopia.

All patients with lymphadenopathy referred to pathology laboratory in the study period were included in the study. In this laboratory, all FNAC reports were recorded in both soft copy and carbon copy and then these records were used to assess pattern of Lymphadenopathy in Hawassa and its' district population. The data were analyzed using SPSS version 16 statistical software.
package to determine frequency or pattern of the enlarged lymph node diseases. Institutional ethical clearance was obtained from research review board of Hawassa University, school of medicine and health sciences and permission was obtained from the head of pathology department before using the data.

Results

A total of 1,067 lymph node disease of FNAC results with full information were obtained from pathology laboratory of Hawassa University referral hospital in the study period. Male to female ratio of patient involved in the study was 1:1.06 with age range of 1 to 85 years and the mean age was 24 year. Cervical lymph nodes were the most frequent 521 (48.82%) lymphadenopathy followed by 243 (22.77%) and 122 (11.43%) in submandibular and axillary lymph nodes respectively. Among the remaining cases, 65 (6.09%) were inguinal, 47 (4.40%) were generalized and 69 (6.46%) were supraclavicular, auricular, submental and others (Figure 1).

Figure 1 Magnitude of lymph nodes diseases by site of lymph nodes

![Figure 1 Pattern of lymph node diseases in Hawassa University referral hospital by age group (n=1067)](image)

<table>
<thead>
<tr>
<th>Age group</th>
<th>TBLa</th>
<th>Reactive</th>
<th>CNSb</th>
<th>Pyogenic abscess</th>
<th>HLc</th>
<th>NHLd</th>
<th>Metastatic</th>
<th>Otherse</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤10</td>
<td>90</td>
<td>54</td>
<td>52</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>219</td>
</tr>
<tr>
<td>11-20</td>
<td>178</td>
<td>44</td>
<td>59</td>
<td>16</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>312</td>
</tr>
<tr>
<td>21-30</td>
<td>161</td>
<td>49</td>
<td>53</td>
<td>26</td>
<td>4</td>
<td>2</td>
<td>8</td>
<td>8</td>
<td>311</td>
</tr>
<tr>
<td>31-40</td>
<td>53</td>
<td>14</td>
<td>22</td>
<td>9</td>
<td>1</td>
<td>4</td>
<td>11</td>
<td>-</td>
<td>114</td>
</tr>
<tr>
<td>41-50</td>
<td>24</td>
<td>4</td>
<td>18</td>
<td>1</td>
<td>-</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>59</td>
</tr>
<tr>
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<td>6</td>
<td>5</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>&gt;60</td>
<td>6</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>-</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>521</td>
<td>173</td>
<td>217</td>
<td>64</td>
<td>7</td>
<td>28</td>
<td>39</td>
<td>18</td>
<td>1067</td>
</tr>
</tbody>
</table>

a) TB lymphadenitis b) Chronic non-Specific C) Hodgkin lymphoma, d) Non-Hodgkin lymphoma, e) supraclavicular, submental and auricular

Table 2 Pattern of lymph node diseases in Hawassa University referral hospital by sex (n=1067)

<table>
<thead>
<tr>
<th>Type of lymphadenitis</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBLa</td>
<td>265 (24.83%)</td>
<td>256 (23.99%)</td>
<td>521 (48.82%)</td>
</tr>
<tr>
<td>Reactive</td>
<td>84 (7.87%)</td>
<td>89 (8.34%)</td>
<td>173 (16.21%)</td>
</tr>
<tr>
<td>CNSb</td>
<td>118 (11.06%)</td>
<td>99 (9.27%)</td>
<td>217 (20.33%)</td>
</tr>
<tr>
<td>Pyogenic abscess</td>
<td>34 (3.18%)</td>
<td>30 (2.81%)</td>
<td>64 (5.99%)</td>
</tr>
<tr>
<td>HLc</td>
<td>5 (0.46%)</td>
<td>2 (0.19%)</td>
<td>7 (0.65%)</td>
</tr>
<tr>
<td>NHLd</td>
<td>20 (1.87%)</td>
<td>8 (0.75%)</td>
<td>28 (2.62%)</td>
</tr>
<tr>
<td>Metastatic</td>
<td>14 (1.31%)</td>
<td>25 (2.34%)</td>
<td>39 (3.65%)</td>
</tr>
<tr>
<td>Others e</td>
<td>10 (0.93%)</td>
<td>8 (0.75%)</td>
<td>18 (1.68%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>550 (51.55%)</td>
<td>517 (48.45%)</td>
<td>1067 (100%)</td>
</tr>
</tbody>
</table>

a) TB lymphadenitis b) Chronic non-Specific C) Hodgkin lymphoma, d) Non-Hodgkin lymphoma, e) supraclavicular, submental and auricular
The highest age group affected with lymph node diseases in the study area were the second and the third decades 312 (29.24) and 311 (29.15%) respectively whereas age group above 60 was the least frequent (Table 1). The highest number of lymph node disease was recorded in 2014 and frequency was increasing in the study area.

Tuberculosis lymphadenitis was the highest 521 (48.82%) cause of lymphadenopathy followed by chronic non-specific lymphadenitis 217 (20.33%) whereas Hodgkin lymphoma 7 (0.65%) was the least. The highest TB lymphadenitis was observed in age group of 11 to 20 years, 178 (34.16%) of the total cases in this group. Age group of 21 to 30 was more affected with reactive lymphadenitis and pyogenic abscess than the others. Hodgkin lymphoma was most frequent in first decade. High frequency of Non-Hodgkin lymphoma was observed in males with related distribution in all age groups. Metastatic tumors were observed in age group of 31 to 40 years and high frequency was recorded in females (Table 2).

**Discussion**

Lymphadenopathy is a commonly encountered clinical manifestation that requires prompt and accurate diagnosis so that a proper treatment protocol can be started as early as possible. The pattern of lesions in current study varied from non-neoplastic lesions like tuberculosis lymphadenitis, chronic non specific and reactive lymphadenopathy to neoplastic lesions like metastatic lymphadenopathy and Lymphomas. Localized adenopathy which can occur from infection of the node or from an infection in its drainage area was a more common presented finding than generalized lymphadenopathy [11].

In our study cervical lymph nodes were the most involved area. This study is in lined with study done in Gondar, Northwest Ethiopia [8, 12, 13]. A wide variety of diseases like upper respiratory tract infections, otitis, tuberculosis and conjunctivitis are frequently associated with cervical lymphadenopathy. Most affected age group with lymphadenopathy in current study was the second and the third decade. Similar studies were recorded in different part of the world [7, 14]. The differential diagnosis of lymphadenopathy changes substantially with age.

In current study, TB lymphadenitis was the highest (48.82%) cause of lymphadenopathy. Our study was comparative with study done in Kathmandu (48.2%) [15], Surat, Indian (50.52%) [16] and northwest Ethiopia (41%) [12]. Ethiopia In all age group it was predominating cause of lymphadenopathy. However, second decade was recorded to be the highest magnitude (57.1%) of total cases of the group. The current study was in agreement with southern India [7], Karachi Pakistan [14]. The world wide increasing incidence of HIV infection, tuberculosis is being frequently reported case [17]. This indicates that tuberculosis is still one of the leading health problems in developing countries, with vast social and massive economic implications. The difference between our finding and other studies might be due to differences in socio-demographic characteristics of study participants.

Chronic non-specific lymphadenopathy was the second frequent cause of enlarged lymph nodes in our study. In some case, the differential diagnosis of lymphadenopathy may be broad and sometimes difficult to specify to wards to specific diagnosis. On the other hand, in the first decades the second cause of lymphadenopathy was reactive in nature accounting for 24.6% of the cases in this group. This result correlates with study done in India [7].

Malignancies were recorded to be the least causes of lymph node enlargement in our study with in patients ranging from early to advanced age. Metastatic tumors were only 3.65% which is the least as compared to study done in West Bengal (India) 79.7% [18] and in Nigeria, 26.5% [19]. And female patients were more affected in our study as study done in different part of the world [20-22]. This might be secondary to metastatic breast cancer

**Conclusion**

Lymphadenopathy can be associated with a wide range of disorders however; tuberculosis lymphadenitis is the most common cause of enlarged lymph node in the study area. Since lymphadenopathy can be associated with a wide range of disorders spanning relatively benign medical problems to life-threatening diseases such as malignancies, the discovery of enlarged nodes requires an accurate diagnosis that demands a systematic evaluation.

**Competing interests**

We authors declare that we have no any competing interests.

**Acknowledgement**

We are grateful to Hawassa University, College of medicine and health sciences department of Pathology for permission of data to carry out this study and the staff of pathology laboratory for their cooperation during data collection.

**Reference**


