CYTOPATHOLOGY

Cytomorphological Study of Lymph Nodes Lesions among Sudanese Patients

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ABSTRACT

Background: This is a hospital based descriptive study conduct at Al Mubarak Cytopathology lab (Khartoum State) during the period from November to December 2020. Aim: The study aimed to identify the common cytopathological patterns of lymphadenopathy among Sudanese patients.

Materials and Methods: Fifty patients presenting with peripheral lymphadenopathy were included in the study, their ages ranging from 4 to 84 years, with a mean age of 39.22 years old. Demographic characteristics, clinical manifestations and FNA materials were prospectively obtained. Results: FNA was performed in 92 cases (100%). There were no technical complications. All cases confirmed adequacy of specimen. Overall, FNA demonstrated 34 (37%) benign lesions and 58 (63%) malignant diagnosis. The benign lesions were reactive lymphoid hyperplasia 25 (31.5%) followed by Tuberculous lymphadenitis 5 (5.4%). Malignant cases were diagnosed with Metastatic carcinoma 43 (42.4%), Non-Hodgkin’s lymphoma 10 (1.8%) and Hodgkin’s lymphoma 5 (9.9%). Conclusion: Metastatic carcinoma and reactive hyperplasia were the most common causes of lymph node lesions among lymphadenopathy Sudanese patients.

Keywords
Lymphadenopathy, Fine needle aspiration cytology (FNAC), Lymph node.

INTRODUCTION

The lymphatic system composed mainly of lymphoid tissue and lymph nodes are an important part of this system. They filter harmful substance like bacteria and cancer cells from the body and help fighting infections. When there is problem such as infection, injury or cancer in the lymph node or the group of the lymph node in that area may swell or enlarge as they work to filter the bad cells, this called lymphadenopathy.¹

They are divided into sections known as follicles, which are subdivided into B zones and T zones, which represent the base location of lymphocytic maturation.²

Lymphadenopathy refers to the nodes which are abnormal in size, consistency, and number. It is one of the commonest clinical presentations of patients attending the Outpatient Department.³ The degree and pattern of morphological changes are dependent on the inciting stimulus and the intensity of the response. Thus, lymphadenopathy may be an incidental finding and/or primary or secondary manifestation of underlying diseases which may be neoplastic or non-neoplastic.⁴

Risk factors for malignancy include age, sex, white race, supraclavicular location of the nodes, and presence of systemic symptoms such as fever, night sweats, and unexplained weight loss.⁵

The use of aspiration biopsy was established in 1847. Since then fine-needle aspiration cytology (FNAC) has been a safe, simple, inexpensive, and reliable method in diagnosis of lesions and masses in various sites and organs. Besides being a minimum invasive technique, it also helps in early direction of appropriate investigations. There are disadvantages of the FNAC like sampling error in form of improper technique,
micro metastasis, benign epithelial inclusions, partial lymph node involvement by lesion and a very small lymph node where sampling is difficult, and a high incidence of false results, especially false negative in the case of lymphomas and the handicaps like assessment of lymph node architecture, which obviously cannot be done on cytological preparation.  

OBJECTIVES

General objectives:
- To study the cytomorphology of lymph nodes lesions in Sudanese patients.

Specific objectives:
- To assess the cytomorphological features of various lymph node diseases among Sudanese patients.
- To determine the most common disorders in lymph nodes enlargement patients.
- To assess the most common cytomorphological changes among Sudanese patients according to their age and sex.

PROCEDURES

Study design:
This is a hospital based descriptive retrospective cross-sectional study to study the various cytomorphological features of neoplastic and non-neoplastic lesions of lymph nodes by FNA in patients presenting with lymphadenopathy and to determine the diseases among them.

Study samples:
Fifty FNA samples were obtained from lymphadenopathy patients.

Study area:
This study was carried out at Almobarak cytolab.

Sample Preparation:
Diff-Quik Staining Procedure Solutions was used. The stains that was used are (Fast green in methanol) - pale green color as a fixative. The staining solution 1 was (Eosin G in phosphate buffer) - red color and the staining solution 2 was (Thiazine dye in phosphate buffer) - blue color. Firstly, the smears were allowed to dry. Secondly, the slides were dipped five times, for one second each, into Stain 1 and allowed excess to drain after each dip. Then they were dipped five times, for one second each, into Stain 2 and allowed excess to drain after each dip. The slides were dipped for one second each, into stain 2 and allow excess to drain after each dip. Then they were rinsed in distilled water. Then the slides were stucked tape strip to it (sticky slide down) and removed excess tape. The smears were allowed to dry in air. Finally, the smears were examined at low power to identify the structures.

Statistical analysis:
Data were analyzed using SPSS version 25.0 computer program, frequencies and means were calculated.

Ethical considerations:
Hospital administration agreements were taken ethically for samples and patients data collection.

RESULTS

Table 4.1 Distribution of age range among the study population:
<table>
<thead>
<tr>
<th>Age range</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-50</td>
<td>68</td>
<td>74%</td>
</tr>
<tr>
<td>51-85</td>
<td>24</td>
<td>26%</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.2 Distribution of Sex among the study population:
<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>49</td>
<td>46.7%</td>
</tr>
<tr>
<td>M</td>
<td>43</td>
<td>53.3%</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.3 Distribution of Cytopathological Diagnosis among the study population:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malignant</td>
<td>58</td>
<td>63%</td>
</tr>
<tr>
<td>Benign</td>
<td>34</td>
<td>37%</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>100%</td>
</tr>
</tbody>
</table>
Table 4.4 Distribution of Sub Cytopathological Diagnosis among the study population

<table>
<thead>
<tr>
<th>Sub Diagnosis</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactive hyperplasia</td>
<td>25</td>
<td>27.2%</td>
</tr>
<tr>
<td>Metastatic carcinoma</td>
<td>43</td>
<td>46.7%</td>
</tr>
<tr>
<td>Non-Hodgkin’s lymphoma</td>
<td>10</td>
<td>10.8%</td>
</tr>
<tr>
<td>Tuberculous lymphadenitis</td>
<td>5</td>
<td>5.4%</td>
</tr>
<tr>
<td>Hodgkin’s lymphoma</td>
<td>9</td>
<td>9.9%</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>100%</td>
</tr>
</tbody>
</table>

Main Text:
The age range in the study varied from 4 years to 85 years old, 74% were less than 50 years old and 26% were more than 50 years old, with a mean age of (39.22), and standard deviation of (21.3) as showed in table 4.1.

Out of 92 patients 43 were male (46.7%) and 49 were females (53.2%). With a slight predominance to females with a female to male ratio 3:2 as showed in table 4.2.

In our study majority of the cases were malignant (58) with a (63%) of the total sample (92), and (34) were benign with a (37%) from the total sample as also showed in table 4.3.

A total of 34 cases (37%) were benign lesions and 58 (63%) were malignant diagnosis. The benign lesions were reactive lymphoid hyperplasia 25 (31.5%) followed by Tuberculous lymphadenitis 5 (5.4%). Malignant cases were diagnosed with Metastatic carcinoma 43 (42.4%) Non-Hodgkin’s lymphoma 10 (10.8%) and Hodgkin’s lymphoma 9 (9.9%) as showed in table 4.4.

DISCUSSION
Lymphadenopathy is a commonly encountered clinical condition requiring prompt and accurate diagnosis to provide treatment as early as possible. The study aimed to calculate the frequency of lymph node lesions among Sudanese patients.

The results of our study showed that the males are less commonly to be diagnosed with lymph node lesion or tumors than females. This is in accordance with various other studies with similar findings. In contrast, males were predominantly affected more than females in the population. This difference may be due to different study population and socio-economic condition of the patients.

The result also stated that the most common diagnosis was metastatic carcinoma in our study. In contrast, studies showed that the most common diagnosis were Tubercular lymphadenitis subsequently followed by Reactive lymphoid lesions. This difference may be due to different study population and socio-economic condition of the patients.

The second most common diagnosis was reactive hyperplasia in the current study, Reactive hyperplasia is a common form of lymphadenitis due to a variety of causes ranging from bacterial, viral, fungal, or non-specific etiology. These findings were in accordance with other studies while in other studies was the first most common diagnosis and this different may be due to different study population, genetic factors, environmental factors and habitual factors like smoking and tobacco consumption.

Non-Hodgkin’s lymphoma then Non-Hodgkin’s lymphoma and the less common diagnosis was Tuberculous lymphadenitis in contrast with other studies.

CONCLUSIONS
Metastatic carcinoma and reactive hyperplasia were the most common causes of lymph node lesions among lymphadenopathy Sudanese patients.

REFERENCES

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