HISTOLOGIC PATTERN OF LYMPH NODE BIOPSIES IN A TERTIARY HOSPITAL IN SOUTHEASTERN NIGERIA.

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INTRODUCTION

- Lymphadenopathy is a common clinical presentation in both medical and surgical clinics.
- Causes are broadly divided into neoplastic and non neoplastic.
- Non neoplastic causes predominate and range from infective to drug reaction, lipid storage disorders and inflammatory conditions. ¹
Documented reports show that non-specific reactive hyperplasia are common in developed world while tuberculosis (TB) are common causes in developing world especially in Africa where HIV is quite common.\textsuperscript{2}

HIV apart from directly causing lymphadenopathy also contributes via several AIDS defining illnesses. \textsuperscript{2, 3, 4}
Given the number of diseases causing lymphadenopathy, it is necessary to define the cause in a particular environment and age.

In children the cause is due to infective and reactive due to developing immune system. ⁵,⁶

In elderly the cause is mainly due to malignancy⁴.
Clinical assessment of peripheral lymph node is easier.  

Assessment of visceral lymph node is more difficult since they require imaging assistance or laparotomy. 

Biopsy of lymph nodes in the upper part of the body is desired as they give better diagnostic yield. 

Biopsy in the lower part of the body is less desired as they are characterized with nonspecific, inflammatory and fibrotic changes.
OBJECTIVE OF THE STUDY

- Data on the spectrum of diseases causing lymphadenopathy in the South eastern Nigeria are limited.
- The study aims at investigating the causes and pattern of lymph node distribution in patients seen at FMC Owerri, Eastern Nigeria over a 4-year period.
Materials and Methods

- All cases of lymph node biopsies done from Jan 2010-Dec. 2013 were reviewed.
- Clinical data regarding age, sex, anatomical sites of lymph node biopsies were obtained from request forms and case notes.
- The relevant slides were retrieved from the archives of the Dept. of Pathology.
All slides were prepared from paraffin embedded blocks.

Routine stain done with eosin and haematoxylin.

Special stain done with ZN where necessary.

Cytogenetics, immunohistochemistry and molecular diagnostic technique like receptor genes rearrangement were not employed.
ETHICAL clearance was obtained from ethics committee of the institution.

Data analysis was done using SPSS version 16 Chicago IL.
RESULTS.

- A total of 141 lymph node biopsies were done.
- Constituting 6% of total histology during the 4-year period Jan. 2010 - Dec. 2013.
- Of the 141 cases; 60 males, 81 females.
- M:F ratio was 1:1.35.
- Mean age 17.6 ± 8.5 years. see table 1.
### TABLE I
**AGE DISTRIBUTION OF PATIENTS**

<table>
<thead>
<tr>
<th>AGE RANGE</th>
<th>MALES (%)</th>
<th>FEMALES (%)</th>
<th>TOTAL (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 9</td>
<td>15 (10.6)</td>
<td>16 (11.3)</td>
<td>31 (22)</td>
</tr>
<tr>
<td>10 – 19</td>
<td>8 (5.7)</td>
<td>13 (9.2)</td>
<td>21 (14.9)</td>
</tr>
<tr>
<td>20 – 29</td>
<td>9 (6.4)</td>
<td>17 (12.1)</td>
<td>26 (18.5)</td>
</tr>
<tr>
<td>30 – 39</td>
<td>12 (8.5)</td>
<td>5 (3.5)</td>
<td>17 (12.0)</td>
</tr>
<tr>
<td>40 – 49</td>
<td>4 (2.8)</td>
<td>10 (7.1)</td>
<td>14 (9.9)</td>
</tr>
<tr>
<td>50 – 59</td>
<td>6 (4.4)</td>
<td>7 (5.0)</td>
<td>13 (9.3)</td>
</tr>
<tr>
<td>60 – 69</td>
<td>4 (2.8)</td>
<td>12 (8.5)</td>
<td>16 (11.3)</td>
</tr>
<tr>
<td>≥ 70</td>
<td>2 (1.4)</td>
<td>1 (0.7)</td>
<td>3 (2.1)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>60 (42.6)</td>
<td>81 (57.4)</td>
<td>141 (100)</td>
</tr>
</tbody>
</table>

Mean Age = 17.6 ± 8.5 years, Range = 68 years (2-70 years).
TABLE 2:
- Shows the site, distribution and histological diagnosis and frequency of diff groups of lymph nodes.
- Regional lymphadenopathy seen in 135 (95.7%).
- Generalized lymphadenopathy occurred 6(4.3%).
- Cervical groups were frequently affected 64(45.4%).
- Axillary groups 28(19.9%).
- Supraclavicular groups 12(8.5%).
Reactive hyperplasia most common cause
46(32.6%)
Tuberculous adenitis seen in 40 (28.3%).
Metastatic deposits seen in 27(19.1%).
Non hodgkins lymphoma 17(12.1%).
Hodgkins lymphoma 7(5%).
Onchocerciasis 3(2.1%).
Rosai – Dorfman’s syndrome 1(0.7%).
### TABLE 2
SITE DISTRIBUTION AND HISTOLOGIC DIAGNOSIS

<table>
<thead>
<tr>
<th>SITE</th>
<th>TOTAL (%)</th>
<th>REACTIVE HYPERPLASIA</th>
<th>TB</th>
<th>METAS</th>
<th>NHL</th>
<th>HL</th>
<th>ROSAI DORTMAN DISEASE</th>
<th>ONCHO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical</td>
<td>64 (45.4)</td>
<td>20 (14.2)</td>
<td>18 (12.8)</td>
<td>12 (8.5)</td>
<td>8 (5.7)</td>
<td>4 (2.8)</td>
<td>1 (0.7)</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>Axillary</td>
<td>28 (19.9)</td>
<td>7 (5.0)</td>
<td>12 (8.5)</td>
<td>6 (4.3)</td>
<td>2 (1.4)</td>
<td>1 (0.7)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Supraclavicular</td>
<td>12 (8.5)</td>
<td>4 (2.8)</td>
<td>3 (3.2)</td>
<td>3 (2.1)</td>
<td>2 (1.4)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Submandibular</td>
<td>8 (5.7)</td>
<td>5 (3.5)</td>
<td>2 (1.4)</td>
<td>1 (0.7)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Submental</td>
<td>4 (2.8)</td>
<td>2 (1.4)</td>
<td>2 (1.4)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Inguinal</td>
<td>19 (13.5)</td>
<td>6 (4.3)</td>
<td>2 (1.4)</td>
<td>3 (2.1)</td>
<td>4 (2.8)</td>
<td>2 (1.4)</td>
<td>-</td>
<td>2 (1.4)</td>
</tr>
<tr>
<td>Generalized</td>
<td>6 (4.2)</td>
<td>2 (1.4)</td>
<td>1 (0.7)</td>
<td>2 (1.4)</td>
<td>1 (0.7)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL</td>
<td>141 (100)</td>
<td>46 (32.6)</td>
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<td>27 (19.7)</td>
<td>17 (12.0)</td>
<td>7 (5.0)</td>
<td>1 (0.7)</td>
<td>3 (2.1)</td>
</tr>
</tbody>
</table>

TB – Tuberculosis.
METAS - Metastasissis.
NHL - Non Hodgkins Lymphoma.
HL- Hodgkins Lymphoma.
ONCHO- Onchocerciasis.
TABLE 3.

- Shows histologic diagnosis, sex distribution and sex ratios of the patients.
- Lymphadenopathy was more common in females.
- Female ratios were higher in most conditions except non Hodgkins lymphoma.
# TABLE 3

**HISTOLOGIC DIAGNOSIS, SEX DISTRIBUTION AND SEX RATIOS OF PATIENTS WITH LYMPHADENOPATHY**

<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th>NO. OF CASES (%</th>
<th>CASES</th>
<th>MALES (%)</th>
<th>FEMALES (%)</th>
<th>M:F RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactive Hyperplasia</td>
<td>46 (32.6)</td>
<td>20 (14.2)</td>
<td>26 (18.4)</td>
<td>1 : 1.3</td>
<td></td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>40 (28.4)</td>
<td>16 (11.4)</td>
<td>24 (17.0)</td>
<td>1 : 1.5</td>
<td></td>
</tr>
<tr>
<td>Metastatic</td>
<td>27 (19.1)</td>
<td>11 (7.8)</td>
<td>16 (11.3)</td>
<td>1 : 1.5</td>
<td></td>
</tr>
<tr>
<td>Non Hodgkins Lymphoma</td>
<td>17 (12.1)</td>
<td>10 (7.1)</td>
<td>7 (5.0)</td>
<td>1.4 : 1</td>
<td></td>
</tr>
<tr>
<td>Hodgkins Lymphoma</td>
<td>7 (5.0)</td>
<td>2 (1.4)</td>
<td>5 (3.6)</td>
<td>1 : 2.5</td>
<td></td>
</tr>
<tr>
<td>Rosai Dortman Disease</td>
<td>1 (0.7)</td>
<td>1 (0.7)</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Onchocerciasis</td>
<td>3 (2.1)</td>
<td>-</td>
<td>3 (2.1)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>141 (100)</strong></td>
<td><strong>60 (42.6)</strong></td>
<td><strong>81 (57.4)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
AFB were demonstrated in 12/40 (30%) of patients with TB adenitis.

All the patients with TB had voluntary testing and counseling for HIV.

14/40 (35%) were HIV positive.

Of the 6 patients with generalized lymphadenopathy 4/6 (66.6%) of them were HIV positive.
DISCUSSION

- Palpable lymph nodes give an important clue to aetiologic diagnosis of disease condition. ², ⁹.
- FNAC is commonly used but excision biopsy is the “gold standard”. ², ⁹.
- Biopsies were done on outpatient basis.
- In line with most studies within and outside the sub region cervical lymph nodes were the most commonly biopsied, followed by axillary and supraclavicular nodes. ², ¹⁰.
The most common aetiologic factor in many studies was TB followed by reactive hyperplasia. 2, 3, 4, 7.

TB and reactive hyperplasia were seen to be more common in cervical lymph nodes.

Our study showed more female preponderance and more affectation in the young adults.

Documented evidence shows that TB is more common in the first three decades of life, reactive hyperplasia in the early years of life and malignancy in the elderly 2, 4, 7.
Analysis of lymphadenopathy in the developing nations shows that infection remains an important cause. 5, 6.

TB remains an important cause in many developing nations 1,2,11.

Reactive hyperplasia and URTI (viral and bacterial) are also important cause in many developing areas 2,5,6.

Malignancy and reactive hyperplasia are more commoner in the developed world 12.
In our study of 141 cases, 46 (32.6%) had reactive hyperplasia.

TB which is the most common in many studies in our sub region was found to be the second aetiologic factor 40 (28.3%).

The percentage of TB found here is smaller than that recorded in many places.

Higher prevalence have been quoted in some series in India, Pakistan and Bangladesh \(^{13}\)\(^{14}\).
The reason for this lower rate is because our study population included both adults and children.

Most studies were done in adult population only.

The reason for more children with reactive hyperplasia has been adduced to reaction to minor stimuli b/c of yet developing immune system \(^5,6,7\).

In the United States reactive hyperplasia is more common cause \(^3,12\).

The reason being lower prevalence of TB and earlier detection of malignancy before onset of nodal metastasis \(^7\).
Lymph node hyperplasia was also common in some studies done in India \(^{15}\), South Africa \(^{16}\) and Zimbabwe \(^{9}\).

The hyperplasia appears to be a consequence of pathological process; an important factor is HIV \(^{15}\).

Change in primary HIV lymphadenopathy ranges from mild follicular hyperplasia to diffuse to “burnt out” lymph node \(^{15}\).
- Lymphadenopathy due to metastasis was seen in 27 (19.1%).
- This is similar to other figures obtained in other Nigerian cities but significantly higher than those obtained from Zimbabwe \(^9\) and Ethiopia \(^{17}\).
- In the US metastasis was found in 29% of cases \(^7, 12\).
- The most common cause of metastasis in our study was breast ca affecting the axillary nodes. This is in agreement with other studies done in Nigeria \(^{14, 18}\).
Lymphoma constituted the most common malignancy causing lymphadenopathy 24(17%).

This is lower than values obtained in other Nigerian cities – Kano 23.6% 7, Ife 23.8% 19 and Jos 28.2% 4.

NHL was more common than HL supporting most other studies in the sub region and beyond 2, 20,21,22.

In the western world NHL was found to be 3-4 times more common than HL 23,24.
Onchocerciasis is a microfilarial infection that is common in the tropical sub-Saharan Africa.

Onchocerciasis was found in 3(2.1%) of our cases\textsuperscript{13}.

Found to be more common in females\textsuperscript{13}.

Also occurred predominantly in the inguinal lymph nodes\textsuperscript{13}. 
CONCLUSION

- Differential diagnosis of lymphadenopathy are many.
- TB and reactive hyperplasia have remained the predominant cause in our environment, followed by metastasis and lymphoma.
- Accurate diagnosis and early intervention is the key to good treatment outcome.
- Definitive histological classification using modern technique like immunohistochemistry and cytogenetics should be made available in our tertiary institutions.
THANK YOU