Proportion of malignancy in cervical lymphadenopathy

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ABSTRACT

Background: Cervical lymphadenopathy is a commonly encountered presenting complaint in out-patient departments. There are many reasons for cervical lymphadenopathy in a range spanning from benign through infective to malignant pathology. This study aims to find out the proportion of malignancy in such patients.

Methods: 100 patients with cervical lymphadenopathy who fulfilled the criteria were included in the study from January 2015 to June 2016. Each patient underwent clinical examination and investigations including ESR, total count, fine needle aspiration cytology and biopsy.

Results: Out of the 100 cases examined, 19 (19%) had malignancy. Among them, 6 (6%) had primary malignancy and 13 (13%) had secondary malignancy. 25 (25%) had tuberculous lymphadenopathy and 46 (46%) had reactive hyperplasia.

Conclusions: There is significant incidence of malignancy in patients with cervical lymphadenopathy. The most common was metastatic lymph node from a primary malignancy. It is important to keep this in mind while evaluating a case of cervical lymphadenopathy.

Keywords: Lymphadenopathy, Lymphoma, Lymph nodes, Neck, Neoplasms

INTRODUCTION

Lymphadenopathy, which is defined as an abnormality in the size or character of lymph nodes, is caused by the invasion or propagation of either inflammatory cells or neoplastic cells into the node. The most common cause of cervical lymphadenopathy is infection, which in children is typically an acute and self-limited viral infection. While most cases resolve quickly, some Entities such as atypical mycobacteria, cat-scratch disease, toxoplasmosis, Kikuchi's lymphadenitis, sarcoidosis, and Kawasaki's syndrome can create persistent lymphadenopathy for many months, and may be confused with neoplasms.

Malignancies in lymph nodes in our country are predominantly metastatic in nature with an incidence varying from 65.7% to 80.4% and lymphomas range from 2% to 15.3% among lymph nodes aspirated from all sites.1-3 The lymphatic system was described in the seventeenth century independently by Olaus Rudbeck and Thomas Bartholin. The cervical lymph nodes are generally classified into seven groups based on their anatomical location and drainage. Initially described by Memorial Sloan Kettering and endorsed by American Academy of Otolaryngology and the American Joint Committee on Cancer, this classification system was used generally for the purpose of staging of head and neck squamous cell carcinoma.1 Since it is well known and easy to remember, it has been used in benign diseases also. Since superficial nodes are involved very late in malignancy, this classification system does not involve all the superficial nodes in the cervical region. The classification system is as follows

- Level I sub mental and submandibular
- Level II upper jugular group
- Level III middle jugular group
- Level IV lower jugular group
- Level V posterior triangle group
- Level VI anterior compartment group.\textsuperscript{3,5}

There are sublevels to these classification systems.\textsuperscript{4} They are:
- Sublevel IA sub-mental nodes
- Sublevel IB sub-mandibular nodes
- Sublevel IIA upper jugular and jugulo digastric nodes anterior to spinal accessory nerve
- Sublevel IIB upper jugular and jugulo digastric nodes posterior to spinal accessory nerve
- Sublevel VA spinal accessory nodes
- Sublevel VB transverse cervical and supraclavicular nodes.

**Structure of lymph node**

Lymph node is an organized collection of lymphoid tissue, through which the lymph passes on its way back into systemic circulation. They are bean shaped or oval shaped and vary from a few millimeters to 1-2 cm in size.\textsuperscript{6} They are located at intervals along the lymphatic system. Vessels which bring in lymph to the node is afferent vessel and there will be several afferent vessels. The lymph after reaching the node, percolates through the substance of the node and drains out through the efferent vessel, which is single in number.

The lymph node contains an outer cortex and an inner medulla. The cortex consists of lymphoid follicles and it surrounds the medulla all around except at the hilum. The hilum is a depression on the lymph node surface where the artery supplying the node enters and veins and the efferent lymph vessel leaves the node. Hilum is the reason for it being bean shaped.

**Etiopathology of cervical lymphadenopathy**

The different reasons for cervical lymphadenopathy can be categorized into infection, neoplastic and miscellaneous.\textsuperscript{7,9}

The Neoplastic causes are primary malignancy, secondary malignancy and benign tumors. Primary malignancies like leukemia and lymphoma. Secondary malignancies are generally squamous cell carcinoma from upper aero digestive tract, adenocarcinoma from gastro intestinal tract, thyroid, breast, kidney and testis, malignant melanoma or sarcomas. Lymphoma is a common malignant disease and head and neck involvement is relatively common.\textsuperscript{10} Clinically, lymphomatous cervical lymph nodes are difficult to differentiate from other causes of lymphadenopathy including metastatic nodes. As the treatment options differ, accurate identification of the nature of the diseases is essential. Metastatic cervical nodes from head and neck primaries are site-specific.\textsuperscript{11,12} Common nodal metastatic sites for head and neck primaries are pharynx, larynx and esophagus.\textsuperscript{13} Papillary carcinoma of thyroid metastasize along internal jugular chain.

Tumors in the oral cavity metastasize to the submandibular and upper cervical regions, although carcinoma of the tongue may give rise to skip metastases in the lower neck. Infraclavicular primaries from breast and lung metastasize to supraclavicular fossa and posterior triangle. Nasopharyngeal carcinoma commonly spreads to upper cervical and posterior triangle nodes.

**METHODS**

An institutional based cross-sectional study involving 100 patients was conducted in the Department of General Surgery, DRSMCSI Medical College, Karakonam, Trivandrum, India from January 2015 to June 2016 with a study duration of 18 months. It was a prospective study. Data about the patients age, sex, symptoms, coexistence of diabetes, were collected using pre-tested and predesigned pro-forma with informed consent from the patient. Clinical examination was done to assess the level of lymph node involved. Final diagnosis was obtained by the means of fine needle aspiration cytology or histopathological examination of the excised lymph node. Institutional ethical committee clearance was obtained before commencement of the study. Written informed consent from all study participants were obtained. Privacy and confidentiality was maintained during all stages of the study.

**Study subjects**

The consecutive patients in the age group of 18 years and above, attending the General Surgery OPD with neck swelling was screened for lymphadenopathy. He/she was informed about the study in detail. Written informed consent (including procedures like FNAC and biopsy) was obtained from enrolled participants.

**Inclusion criteria**

All patients who presented in surgery OPD in age group of 18 years and above with lymph node swelling in the cervical region for more than two weeks.

**Exclusion criteria**

- Neck swellings other than lymph nodes
- Acutely ill patients.

**Data collection technique**

The consecutive patients with neck swelling attending in the General Surgery OPD of DRSMCSI Medical College. Socio demographic details were obtained from the patient. Data was collected using a proforma. Patients were classified based on age and sex.
Clinical assessment was done. Enlarged lymph nodes were assessed by Fine Needle Aspiration cytology and further excision biopsy was done in cases where FNAC was inconclusive.

Data analysis

Data was analysed using statistical analysis. All qualitative variables are expressed as proportions and quantitative variables as mean and standard deviation. Chi square test is the statistical test of significance, odds ratio was calculated for the strength of association.

RESULTS

This was a cross sectional study, we recruited 100 patients with cervical lymphadenopathy according to the inclusion and exclusion criterions. They were evaluated in detail with clinical examination and investigations. Of the total study population, there were 54% females and 46% males.

Table 1: Comparison of gender distribution of patients studied.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Malignant lymphadenopathy</th>
<th>Other causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>13</td>
<td>33</td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>81</td>
</tr>
</tbody>
</table>

Among the 46 males, 13 had malignancy and among the 54 females 6 had malignancy.

55% of participants were in the age group of 18 to 40 years. 29% were in 41 to 60 years and 16% belonged to more than 60 years of age group. Mean age of the participants was 41.52 years.

Table 2: Comparison of age distribution of patients studied.

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Malignant lymphadenopathy</th>
<th>Other causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-40</td>
<td>4</td>
<td>51</td>
</tr>
<tr>
<td>41-60</td>
<td>7</td>
<td>22</td>
</tr>
<tr>
<td>&gt;60</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>81</td>
</tr>
</tbody>
</table>

Malignant lymphadenopathy was more in the above 60 years age group.

Level 2 lymph node group was the most affected in presentation (26%), followed by level 3 (21%). Only 7% presented with level 4 lymphadenopathy. 7% had multiple level involvement. Out of the total participants, 46% had reactive lymphadenitis and 25% had tuberculous lymphadenitis. 19% had malignant lymphadenopathy. Most of the malignant lymphadenopathy was due to secondary deposits (13%, n=100) and lymphoma accounted for 6% (n=100).

Hodgkin’s and Non-Hodgkin’s lymphoma had equal representation with 3% each (n=100). 11.1% of female participants had malignancy whereas 28.3% of males had malignancy. Malignancy was more common in age category of more than 60 years (42.1%, n=19), and was least common in 18 to 40 years (21%, n=19).

Table 3: Comparison of lymph node level affected in patients studied.

<table>
<thead>
<tr>
<th>Lymph node level involved</th>
<th>Malignant lymphadenopathy</th>
<th>Other causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Level II</td>
<td>4</td>
<td>22</td>
</tr>
<tr>
<td>Level III</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Level IV</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Level V</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Multiple levels involved</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>81</td>
</tr>
</tbody>
</table>

Level V was the most commonly affected among malignant lymphadenopathy.

Table 4: Malignancy in the patients studied.

<table>
<thead>
<tr>
<th>Malignancy</th>
<th>No.</th>
<th>Percentage (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hodgkin’s lymphoma</td>
<td>3</td>
<td>15.79%</td>
</tr>
<tr>
<td>Hodgkin’s lymphoma</td>
<td>3</td>
<td>15.79%</td>
</tr>
<tr>
<td>Metastatic deposits</td>
<td>13</td>
<td>68.42%</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>100%</td>
</tr>
</tbody>
</table>

Both Hodgkin’s and Non-Hodgkin’s lymphoma had equal representations while secondary deposits had the maximum occurrence.

DISCUSSION

During the past 3 decades, the incidence of colorectal Cervical lymphadenopathy was a common presentation of malignancy of the head and neck region. We encountered 100 patients with cervical lymphadenopathy and in present study, there were 54% females and 46% males. Hafez et al, also had 53.5% females and 56.5% males.14

In the present study, the male to female ratio was 1:1.174. 11.1% of females had malignancy in lymph node, whereas 28.3% of males had malignancy. Most participants in the present study belonged to the age group of 18 to 40 years, with 55% of participants.

There were only 16% of participants in the age group of more than 60 years. 42.1% of participants in the age category of more than 60 years had malignancy, whereas only 21.1% of participants in age category of 18 to 20 years had malignancy.

In the present study, the most common presentation was with level 2 lymphadenopathy. There were 26% with level 2 lymphadenopathy. Least common was level 4 lymphadenopathy. There were 13% with level 5
lymphadenopathy. Highest incidence of malignancy was in the participants presenting with level 5 lymphadenopathy (36.8%). Next commonest was level 3 lymphadenopathy (23.8%) Level 1 lymphadenopathy had the least incidence of malignancy (10%).

Most of the participants had reactive lymph node in histopathology (46%). The next commonest was tuberculous lymph node (25%). 4% had chronic suppurative lymph node. There were 3% with kikuchi disease and 2% with toxoplasmosis. The least common was actinomycosis with only 1%. Other studies also revealed benign diseases were more frequent than malignant diseases. Hirachand S et al, showed that 77.6% had benign pathology.15 But Ahmad SS et al, showed that 59.13% was malignant and 40.87% was benign.16 But Steel et al found majority of cases were malignant (59%) and 34% of cases were benign.17

In the present study, 19 of the participants had malignancy in histopathology. Majority of the malignant lymph node was due to metastatic lymph node in the present study (68.42%, n=19) and both Hodgkin’s lymphoma and Non-Hodgkin’s lymphoma was equal in incidence (15.79% each, n=19).

Hirachand S et al showed that 22.38% were having malignancy.15 Majority of the malignant lymph node was due to metastatic disease (53.3%) and 33.33% had Non-Hodgkin’s lymphoma and 13.33% had Hodgkin’s lymphoma.

CONCLUSION

There is significant incidence of malignancy in patients with cervical lymphadenopathy. The most common was metastatic lymph node from a primary malignancy. It is important to keep this in mind while evaluating a case of cervical lymphadenopathy.

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