GCC Cancer Treatment Protocol Guidelines for Breast and Colorectal Cancer
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Original Article

Clinico–hematological Profile of 184 Patients with Non–Hodgkin’s Lymphoma: An Experience from Southern Pakistan

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Abstract

Background: Non–Hodgkin lymphoma (NHL) is a diverse group of lymphoma comprises of divergent tumors with paradoxical clinical behaviors and potential difference in response to therapy. We conducted a data–base analysis on NHL patients to evaluate the clinico–epidemiological features and WHO spectrum of NHL in Pakistani patients.

Materials and Methods: This descriptive study was conducted over a period of 5 years from January 2011 to December 2015 at Hematology department of Liaquat National Hospital. All NHL cases were diagnosed by morphology on H&E sections and Immunohistochemical profile according to WHO classification of lymphoid neoplasms.

Results: 184 histopathologically confirmed cases of NHL were identified. There were 139 males and 45 females, with a male to female ratio of 3: 1. The mean age was 48.5±16.0 years with the median age of 50 years. B symptoms were present in 80.4% of patients. Lymph node enlargement was present in 71.1% of the cases. 168 patients had B–cell lymphoma (91.3%) and 16 patients had T–cell (8.6%) lymphoma. Overall 158 (85.8%) patients had aggressive lymphoma. Histopathologically, Diffuse large B–cell lymphoma constituted major subtype in 67.9%, followed by follicular lymphoma in 7.6% patients. Marginal lymphoma in 3.8% patients had mantle cell, 2.7% patients of anaplastic large cell and 2.1% patients each for Burkitt’s lymphoma and T–cell rich lymphoma. In T cell neoplasm, peripheral T cell lymphoma and adult T cell lymphoma are the main variants accountable in 4.3% and 3.2% respectively.

Conclusions: B cell lymphoma is more frequent than T cell lymphoma with diffuse large B–cell lymphoma being the commonest NHL. Our analysis shows that clinico–pathological features of NHL are comparable to published data. However, aggressive lymphoma and predominance of B symptoms are more frequently seen.

Keywords: Non– Hodgkin’s lymphoma, WHO subtypes, Pakistan.

Introduction

Lymphoid neoplasms are a diverse group of tumor which broad categories in Hodgkin lymphoma (HL) and Non–Hodgkin lymphoma (NHL). NHL group is in particular heterogeneous and show considerable variation clinically, biologically and epidemiologically worldwide. NHL can occur at any age but they are more common in adults over the age of 50 years. The disease accounts for 5.1% of all tumor cases and 2.7% of all malignancy deaths. Behaviors of its subtypes vary from low grade indolent to high grade aggressive lymphomas.

The relative frequencies of the various NHL subtypes vary noticeably in different geographical regions globally. Epidemiological risk factors causative to these variations are still uncertain, but possibly it is a combination of genetic, lifestyle factors as well as socio–economic status, resource and environmental factors that are distinctive for each region.

As far as Pakistan is concerned, limited epidemiological data on NHL is available. The classification of NHL has always been controversial and challenging, owing to the indistinct margins between various classifications systems, and also a wide range of histological appearances.
and clinical features at presentation make diagnosis difficult. The most recent is the WHO classification system. According to the World Health Organization classification there are over 40 subtypes in the NHL group. These sub-classification of lymphoma is not only essential for diagnosis and prognostication but it will also reflect the treatment modalities for each group.

The purpose of this article is to review cases of NHL during a five year period and classify them according to the WHO guidelines in order to understand the biological behavior of these tumors regionally and compared them with global patterns.

Material and Method

This descriptive study was conducted at hematology department of Liaquat National Hospital, extended over a period of 5 years from January 2011 to December 2015. All NHL cases were diagnosed by morphology on H&E sections and Immunohistochemical profile according to WHO classification of lymphoid neoplasms. Immunohistochemical (IHC) stains using antibodies against CD 20, CD 3, CD 10, CD 5, CD 23, BCL2, cyclin D1 and CD 79a were done in each case. Additional markers were applied if deemed necessary. Patients diagnosed as NHL who were ≥15 years of age were included in the study. Patients with Hodgkin’s lymphoma, chronic lymphoid leukemia, hairy cell leukemia and prolymphocytic leukemia were excluded. Patients with another associated malignancy or having relapsed/refractory NHL were also excluded.

Based on this, a total of 184 subjects with newly diagnosed untreated NHL were included in this analysis. Complete blood counts were determined by automated analyzer (Cell Dyne counter). Bone marrow aspirate and trephine specimens were taken from posterior iliac spine by the standard technique after written consent.

Data analysis:

Data collected was recorded on Microsoft spreadsheet and later statistical analyses were carried out using IBM statistics SPSS version 22.0 (SPSS Inc, Chicago, IL, USA). Results were reported as the mean (±SD) for quantitative variables. Frequency and percentages were calculated for qualitative variables.

Results

Patient’s characteristics

Out of 184 patients, 139 were males (75.5%) and 45 were females (24.4%) with male to female ratio of 3:1. Age ranged between 16 and 74 years with the mean age was 48.5±16.0 years and the median age of 50 years. Majority of patients (60.8%) were under 50 years of age.

Clinical findings

B symptoms were present in 80.4% of patients, out of which low grade fever was commonest seen in 120 (65.2%); night sweating in 59.2%, while 84 (45.6%) patients had history of weight loss. Lymph node enlargement was present in 71.1% cases. The splenomegaly and hepatomegaly were noted in 33 (17.9%) and 22 (11.9%) patients respectively as shown in Table-1.

WHO subtypes of NHL

168 patients had B–cell lymphoma (91.3%) and 16 had T-cell (8.6%) lymphoma. Overall 158 (85.8%) patients had aggressive lymphoma and remaining 26 (14.1%) had indolent disease. Histopathologically, Diffuse large B–cell lymphoma constituted major subtype in 125 (67.9%) patients, followed by follicular lymphoma in 14 (7.6%) patients. Marginal lymphoma in 7 (3.8%) patients, 6 (3.2%) patients had mantle cell lymphoma, 5 (2.7%) patients of anaplastic large cell and 4 (2.1%) patients each for Burkitt’s lymphoma and T-cell rich lymphoma. The least encountered was small lymphocytic lymphoma (SLL) in 3 (1.6%) patients.

In T cell neoplasm, peripheral T cell lymphoma and adult T cell lymphoma are the main variants accountable in 8 (4.3%) and 6 (3.2%) patients respectively. Only 2 patients (1.0%) presented with mycosis fungoid as shown in Table–2.

Laboratory features

The mean hemoglobin was 10.8±2.7g/dl with the mean MCV of 82.2±8.8 fl. The mean total leucocyte count of 9.0±6.5x10^9/L; mean absolute neutrophils count of 4.3±3.2x10^9/L and the mean platelets count were...
Anemia (Hb<10gm/dl) was noted in 21 (11.4%) patients. Thrombocytopenia (platelets count <100x10^9/l) was detected in 14 (7.6%) patients.

Discussion

Non–Hodgkin’s lymphoma is not an uncommon heterogeneous neoplasm with variable disease biology. The incidence of lymphoma is increasing, largely contributed by NHL. Hodgkin’s lymphoma accounts for about 10% of all lymphomas and the remaining 90% are referred to as non–Hodgkin lymphoma.\(^7\) Despite the considerable sensitivity to chemotherapeutic and radiotherapeutic interventions of NHL, disease still have fatal outcome.

Pakistan is located in the ‘lymphoma belt’, the geographical boundaries of which broaden from southwestern Asia to Middle East to Northern Africa.\(^8\) NHL is more common in developed countries (50.5% of cases worldwide), with highest rates reported in Australia and North America, intermediate in Europe and the Pacific islands and relatively low throughout the Asia.\(^8\) At regional level, NHL is 4th most common malignancy in males accounting for 6.1%, while accounted in 2.4% of all malignancies in female.\(^10\)

Local data regarding lymphoma is scarce; hence an insight is needed to identify the disease picture and spectrum regionally. The present study showed a high number of cases of NHL were diagnosed in males (75.5%) than females (24.4%). Analogous to our study, other studies from Jordan, Taiwan, UAE and Pakistan also reported the same findings.\(^11–14\)

The risk of NHL increases with the advancing age.\(^15\) However, NHL can develop in people of any age, including children. Most patients are diagnosed in their 6th or 7th decade of life. NHL tends to be a disease of older age in Europe and North America.\(^16\) The median age of disease onset is ~65 years with around 60.8% of patients being diagnosed above 60 years in west.\(^17\) Earlier reports from Northern India and Southern Punjab reveal the median age for NHL to be between 40 to 45 years.\(^18,19\) In present series an early presentation of NHL was seen in patients with the mean age of 48.5 years. Age variance may be elucidated by relatively less life expectancy and younger population in our country.

As far as the distribution of NHL subtypes is concerned, it revealed some similarities and a few differences when compared with other NHL series from different Asian countries. The frequency of B and T cell NHL are more or less similar as observed in the prior Pakistani studies.\(^8,20,21\) In variance with the some Asian studies, the proportion of low–grade lymphomas was twice (14.1%) that of previous study(7%).\(^13\)

Among the B cell NHL, Diffuse large B–cell Lymphoma (DLBCL) is the commonest malignant lymphoma all over the world and we also determined the same in our series.\(^1,22\) The next commonest B cell lymphoma in present series was Follicular lymphoma followed by marginal lymphoma. These results are in agreement with other local studies who re–ported Follicular lymphoma as 2nd commonest B cell lymphoma.\(^20,21\)

Though T cell lymphomas have been reported more frequent (12.5% and 38.8%) in prior Pakistani studies\(^23,24\) as compared to western studies, overall T cell lymphomas are less frequent all over the world except the Far East Asian countries for unknown reasons.\(^23,24\) Nonetheless recognizing and diagnosing various subtype of lymphomas gives prognostic significance, as generally the prognosis of T cell lymphomas is poorer than B cell lymphomas.\(^12\) Peripheral T cell lymphoma and adult T cell lymphoma are the main variants in this study which was in accordance to a local study and international studies done in Taiwan and Korea.\(^12,20,25\)

In conclusion, NHL is occurring at a younger median age in Pakistan than in the developed countries. B cell lymphoma is more frequent than T cell lymphoma with DLBCL being the commonest NHL. Our analysis shows that clinicopathological features of NHL are comparable to published data. Aggressive lymphoma and predominance of B symptoms are more frequently seen.

### Table 2. Classification of Non–Hodgkin’s lymphoma

<table>
<thead>
<tr>
<th>Type of Neoplasm</th>
<th>n=184</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diffuse large B cell lymphoma</td>
<td>125</td>
<td>67.9%</td>
</tr>
<tr>
<td>Follicular lymphoma</td>
<td>14</td>
<td>7.6%</td>
</tr>
<tr>
<td>Marginal lymphoma</td>
<td>7</td>
<td>3.8%</td>
</tr>
<tr>
<td>Mantle cell lymphoma</td>
<td>6</td>
<td>3.2%</td>
</tr>
<tr>
<td>Anaplastic lymphoma</td>
<td>5</td>
<td>2.7%</td>
</tr>
<tr>
<td>Burkett’s lymphoma</td>
<td>4</td>
<td>2.1%</td>
</tr>
<tr>
<td>T cell rich lymphoma</td>
<td>4</td>
<td>2.1%</td>
</tr>
<tr>
<td>Small lymphocytic lymphoma</td>
<td>3</td>
<td>1.6%</td>
</tr>
<tr>
<td>Peripheral T cell lymphoma</td>
<td>8</td>
<td>4.3%</td>
</tr>
<tr>
<td>Adult T cell lymphoma</td>
<td>6</td>
<td>3.2%</td>
</tr>
<tr>
<td>Mycosis fungoid</td>
<td>2</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

201.9±129.3x10^9/l. Anemia (Hb<10gm/dl) was noted in 21 (11.4%) patients. Thrombocytopenia (platelets count <100x10^9/l) was detected in 14 (7.6%) patients.
These preliminary results may prove helpful and provide base for the future researchers on large scale.

**Acknowledgment**

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**References**


