Zagazig University Medical Journal
www.zumj.journals.ekb.eg

Volume 28, Issue 1, January 2022, Page 145-150 XML

Manuscript ID ZUMJ-1909-1525 (R1)
DOI 10.21608/zumj.2019.17056.1525

ORGINAL ARTICLE

Epidemiological Characteristics of Non-Hodgkin Lymphoma in Clinical Oncology and Nuclear Medicine Department in Zagazig University Hospitals (2013-2017)

Eman Ismail Ibrahim, Lobna Abdelaziz Abdelaziz, Basant Shaaban Hafez and Ziad Abdulhafiz A.Turki
Clinical Oncology and Nuclear Medicine, Faculty of Medicine, Zagazig University

Corresponding author : Ziad Abdulhafiz A.Turki M.B.B.CH, Tripoli University, Libya
E-Mail: zaturki@gmail.com

Submit Date	2019-09-20 16:39:48
Revise Date	2019-10-27 18:45:21
Accept Date	2019-11-06 00:28:50

ABSTRACT

Background: Lymphomas are a diseases group caused by malignant lymphocytes which accumulate in lymph nodes and cause the clinical features of lymphadenopathy. The main subdivision of lymphomas is Hodgkin's lymphoma and Non-Hodgkin's lymphoma. **Aim of the work:** The aim of this study was to study the epidemiology of Non Hodgkin Lymphoma in Clinical Oncology and Nuclear Medicine Department in Zagazig University Hospitals. **Patients and methods:** This retrospective cross-sectional study was carried out in Clinical Oncology and Nuclear Medicine department of Zagazig University Hospitals. Approval for the study was obtained from research administration and the Research Ethics Committee, Faculty of Medicine, Zagazig University. Results: there was statistically significant difference between male and female regarding the cervical site of the tumor. **Results:** There was a high statistical significant difference between males and females as regard hemoglobin level. Also, there was a statistical significant difference between the age groups ≤ 50 years and > 50 years in regard to chemotherapy and target therapy, while there was no statistical significant difference between the age groups ≤ 50 years and > 50 years regarding to radiotherapy. **Conclusion :** There was of paucity of the incidence and mortality data on lymphomas in Sharqia governorate. NHL is an important reason for cancer mortality in Zagazig. The incidence of NHL in Egyptians are several-fold higher, indicating that the national cancer burden was raised with Zagazig's economic progress

Keywords: Epidemiological Characteristics, Non-Hodgkin Lymphoma, Clinical Oncology

INTRODUCTION

Lymphomas were divided into 2 groups of neoplasms; non-Hodgkin lymphoma (NHL) and Hodgkin disease. About 85% of all malignant lymphomas were NHLs. NHL includes many clinicopathologic subtypes, each with distinct epidemiologies; etiologies; immunophenotypic, morphologic, genetic, clinical features and therapy response. [(1)]

NHL is the most prevalent hematopoietic neoplasm, representing about 4% of all diagnosed cancer and ranking seventh in frequency among all cancers. [(2)] NHL is more than 5 times as common as Hodgkin disease. Incidence varied according to race; white peoples have a higher risk than black peoples and Asian American peoples. Generally, the NHL incidence in men is slightly higher than in women, where male-to-female ratio about 1.4:1. The ratio may be varied according ti the subtype of NHL, however; the primary

mediastinal diffuse large B-cell lymphoma was higher in females than in males [3].

The DLBCL diagnosis must be carried in a reference haematopathology laboratory experienced in morphological interpretation and the facilities to carry the full range of phenotypic and molecular investigations [4].

Treatment strategies must be stratified due to age, IPI and feasibility of intensified dose aspects. The inclusion in a clinical trial is recommended when available. In patients with high tumour load, precautions such as the prednisone (p.o.) administration for several days as 'prephase' treatment are advised to avoid tumour lysis syndrome.[5]. Reduction of Dose due to haematological toxicity should be avoided. Febrile neutropaenia justifies prophylactic use of haematopoietic growth factors in patients whom treated with curative intent and in older patients > 60 years [6]. Six cycles of combination chemotherapy with cyclophosphamide, doxorubicin, vincristine and prednisone (CHOP) treatment combined with six doses of rituximab given every 21 days is the current standard. Consolidation by radiotherapy to initial non-bulky sites had no confirmed benefits in patients treated with rituximab or not[7].

AIM OF THE WORK

The aim of this study was to study the epidemiology of Non Hodgkin Lymphoma in Clinical Oncology and Nuclear Medicine Department in Zagazig University Hospitals.

PATIENTS AND METHODS

This retrospective cross-sectional study was carried out in Clinical Oncology and Nuclear Medicine department of Zagazig University Hospitals. Approval for the study was obtained from research administration and the Research Ethics Committee, Faculty of Medicine, Zagazig University.

Subjects:

This study included all non-Hodgkin lymphoma patients in Clinical Oncology and Nuclear Medicine Department from 2013 to 2017.

Written informed consent was obtained from all participants. The work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Inclusion criteria:

All pathological confirmed non-Hodgkin lymphomas patients' files in Clinical Oncology and Nuclear Medicine Department from 2013 to 2017 in age group 18 years and above.

The NHL diagnosis of was established in all patients by pathology in conjunction with immunophenotype studies and subclassified according to the World Health Organization (WHO) classification and the investigations, anticancer treatments and follow-up examinations were completed.

Exclusion criteria:

Patients less than eighteen year of age and Patients with incomplete data in the files.

Methods:

The basic information for Non Hodgkin Lymphoma registration includes data on:

Full history taking (age and gender), Clinical examination including B symptoms at the time of diagnosis. All investigations (CBC, LFT, KFT, LDH, ESR, pathological, immunophenotyping and CT scan), Types and stage of tumor and kind of treatment and Follow up.

Statistical analysis

Data were collected, tabulated and analyzed by SPSS 20 software. The significance level was set at $P < 0.05$.

RESULTS

Table (1), shows that age of the studied group ranged from 18 to 86 years with mean 51.8±14.9 years, the mean of age group ≤ 50 years was 44.3% of the patients and age group > 50 years was 55.7% of the patients. Regarding sex distribution 51.6% of the cases were male. **Table (2)**, showed that the cervical was the most common constituting 38% with 78.2% of studied group with no extra nodal site. The most common stage of the tumor was stage II 46.2% then stage III 41.8%. 78.2% of studied group has positive CD 20 with 78.8% of studied group having Diffuse large B-cell lymphoma. **Table (3),** showed the mean hemoglobin level was 10.8±1.7 and 43% of all patients having B. symptoms. **Table (4),** showed that as

regarding treatment, 98.1% of the whole study population received chemotherapy, 53.2% received radiotherapy and 22.8% received target therapy. **Table (5),** showed that there was a significant statistical difference between the age groups ≤ 50 years and > 50 years regarding to chemotherapy and target therapy. While there was no statistical significant difference between the age groups ≤ 50 years and > 50 years regarding to radiotherapy.

Table (1): Baseline demographic data of the whole study population

Demographic data	**All patients**
Count (%)	316 (100%)
Age (years)	
Mean ± SD	51.8 ± 14.9
Median (Range)	53.7 (18 – 86)
Age groups	
≤ 50 years	140 (44.3%)
> 50 years	176 (55.7%)
Gender	
Male	163 (51.6%)
Female	153 (48.4%)

Table (2): Baseline tumor characteristics of the whole study population

Tumor characteristics	**All patients**
Count (%)	316 (100%)
Primary site	
Abdominal	27 (8.5%)
Cervical	120 (38%)
Inguinal	23 (7.3%)
Axillary	57 (18%)
Alimentary tract	24 (7.6%)
Bony structures	24 (7.6%)
Mediastinal	9 (2.9%)
Liver and/or spleen	14 (4.4%)
Other sites (brain, breast, skin, tonsils, tongue, muscles, thyroid and omentum)	18 (5.7%)
Extra-nodal sites	
No	247 (78.2%)
Yes	69 (21.8%)
Stage of tumor	
Stage 1	27 (8.5%)
Stage 2	146 (46.2%)
Stage 3	132 (41.8%)
Stage 4	11 (3.5%)
CD20	
Negative	69 (21.8%)
Positive	247 (78.2%)
Histopathology	
Diffuse large B-cell lymphoma	249 (78.8%)

Tumor characteristics	All patients
Small-cell lymphoma	24 (7.6%)
Mixed-cell lymphoma	23 (7.3%)
Round-cell lymphoma	5 (1.6%)
T-cell lymphoma	15 (4.7%)

Table (3): Baseline laboratory and clinical data of the whole study population

Laboratory and clinical data	All patients
Count (%)	316 (100%)
Hemoglobin (gm/dL)	
Mean ± SD	10.8 ± 1.7
Median (Range)	11 (6 – 15)
B symptoms	
No	180 (57%)
Yes	136 (43%)

Table (4): Baseline therapeutic data of the whole study population

Therapeutic data	All patients
Count (%)	316 (100%)
Chemotherapy	
No	6 (1.9%)
Yes	310 (98.1%)
Radiotherapy	
No	148 (46.8%)
Yes	168 (53.2%)
Target therapy	
No	244 (77.2%)
Yes	72 (22.8%)

Table (5): Comparison between the age groups regarding the therapeutic data

Therapeutic data	≤ 50 years	> 50 years	Test	P-value (Sig.)
Count (%)	140 (44.3%)	176 (55.7%)		
Type of therapy				
Chemotherapy	140 (100%)	170 (96.6%)	4.865 ‡F	0.036 (S)
Radiotherapy	77 (55.0%)	91 (51.7%)	0.340 ‡	0.560 (NS)
Target therapy	43 (30.7%)	29 (16.5%)	8.983 ‡	0.003 (S)

DISCUSSION

Burkitt's lymphoma and lymphoblastic lymphoma were the most common subtypes in children, while a small lymphocytic lymphomas and follicular lymphomas were common in elderly patients. Small lymphocytic lymphomas and follicular lymphomas frequencies were found to be higher in West countries compared to East countries [8].

In Egypt, malignant lymphoma constitutes 8.6% of cases, ranking the fourth among different cancers, comprising a relative frequency of 10.1%, the 3 year period 1998-

2000, Department of Pathology, NCI, Cairo**.** Diffuse large B- cell type is the most common type constituting 49 % of NHL cases at NCI, Cancer Pathology Registry [(9)]**.**

Our study showed that age of the studied group ranged from 18 to 86 years with mean 51.8±14.9 years, the age group ≤ 50 years was 44.3% of patients and age group > 50 years was 55.7% of patients.

Regarding sex distribution, we found 51.6% of the patients were male. This is in agreement with the study of **Goldman et al.** [(10)] who found that 61.9% of Egyptian patients with non-Hodgkin lymphoma were males. In Nigeria, **Omoti et al.** [(11)] found that male : female ratio was 1.6:1 and observed NHL in 46-59 years group. **Novelli et al.** [(12)] reported that the group of 60-80 years old was the highest age range of diagnosis.

As regard primary site of tumor, we found the most common site was in cervical area constituting 38% while 78.2% of patients with no extra nodal site. The most common stage of the tumor was stage II 46.2% then stage III 41.8%. CD20 was pasitive in 78.2% of studied group with 78.8% of studied group having diffuse large B-cell lymphoma. This results were in agreement with the study of **Essadi et al.,** [(13)] who found a high increase of NHL in the last two decades especially in the extranodal lymphomas in developed countries. Extranodal origin presents rate of 24-48%. Extranodal lymphomas could be determined in all organs, but head and neck, skin, stomach, brain, small intestine are the most common sites.

As regard treatment, 98.1% of the whole study population received chemotherapy, 53.2% receiving radiotherapy and 22.8% in target therapy. There was statistically significant difference between male and female regarding the cervical site of the tumor. There was a highly significant statistical difference between males and females as regard hemoglobin level.

Also, there was a significant statistical difference between the age groups ≤ 50 years and > 50 years regarding to chemotherapy and target therapy, while there was no statistical difference between the age groups ≤ 50 years and > 50 years regarding to radiotherapy.

Özgür et al. [(14)] analyzed the descriptive epidemiology of NHL. 133 NHL patients during the period from 2005 to 2013 have been reviewed retrospectively in the Mustafa Kemal University, Pathology Department. All patients were classified according to World Health Organization modified in 2008. 82 patients (61.7%) were male and 51 patients (38.3%) were females. 92 patients (69.2%) were nodal lymphoma, and 41 (30.8%) were extranodal lymphoma. The common extranodal involvement regions were tonsils and nasopharynx with frequencies of 21.9% (9) and 19.5% (8), respectively. The age distribution revealed that NHL were diagnosed in the ages of 41-65 years in nodal (41.3%) and extranodal sited NHL groups (53.6%). The frequent NHL was diffuse large cell B cell lymphoma (50.4%) and chronic lymphocytic leukemia/small lymphocytic lymphoma (17.3%).

Conclusion : There was of paucity of the incidence and mortality data on lymphomas in Sharqia governorate. NHL is an important reason for cancer mortality in Zagazig. The incidence of NHL in Egyptians are several-fold higher, indicating that the national cancer burden was raised with Zagazig's economic progress.

No conflict of interest

No financial disclosures

REFERENCES

1- **Armitage J.O., Gascoyne R.D., Lunning M.A., Cavalli, F.** Non-hodgkin lymphoma. The Lancet 2017, 390 (10091): 298-310.

2- Teras L.R., DeSantis C. E., Cerhan J.R., Morton L.M., Jemal A., Flowers C.R. 2016 US lymphoid malignancy statistics by World Health Organization subtypes. CA: a cancer journal for clinicians 2016, 66 (6): 443-459.

3- Martelli M., Ferreri A., Di Rocco A., Ansuinelli M., Johnson P.W. Primary mediastinal large B-cell lymphoma. Critical reviews in oncology/hematology 2017, 113, 318-327.

4- Tilly H., Gomes M., Vitolo U., Jack A., Meignan M., Lopez G. Diffuse large B-cell lymphoma (DLBCL): ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. Annals of oncology 2015; 26 (5): v116-v125.

5- Chu E., DeVita JrT. (2018). Physicians' Cancer Chemotherapy Drug Manual 2019. Jones & Bartlett Learning.

6- Klastersky J., De Naurois J., Rolston K., Rapoport B., Maschmeyer G., Aapro M. Management of febrile neutropaenia: ESMO clinical practice guidelines. Annals of Oncology 2016, 27(5): v111-v118.

7- Zimmermann M., Oehler C., Mey U., Ghadjar P., Zwahlen D. Radiotherapy for Non-Hodgkin's lymphoma: still standard practice and not an outdated treatment option. Radiation Oncology 2016; 11 (1): 110.

8- Ekström-Smedby K. Epidemiology and etiology of non-Hodgkin lymphoma–a review. Acta oncologica 2006; 45(3) : 258-271

9- **Hosny G., Farahat N., Hainaut P.** TP53 mutations in circulating free DNA from Egyptian patients with non-Hodgkin's lymphoma. Cancer letters 2009, 275 (2): 234-239.

10- Goldman L, Ezzat S, Mokhtar N. Viral and non-viral risk factors for non-Hodgkin's lymphoma in Egypt: heterogeneity by histological and immunological subtypes. Cancer Causes Control 2009; 20(6): 981-7.

11- Omoti CE, Nwannadi AI, Obieche JC, Olu-Eddo AN. The epidemiological features of lymphoid malignencies in Benin city, Nigeria: a 15 years study. Pan Afr Med J 2012; 11: 10.

12- Novelli S, Briones J, Sierra J. Epidemiology of lymphoid malignencies: last decade update. Springerplus 2013; 2: 70.

13- Essadi I, Ismaili N, Tazi E. Primary lymphoma of the head and neck: two case reports and review of the literature. Cases J 2008; 1: 426.

14- Özgür T, Yaldiz M, Kaya H, Yengil E and Toprak S. Descriptive epidemiology of non-Hodgkin's lymphomas in Hatay. Eastern Journal of Medicine 2013; 18: 181-184.

To Cite

TURKI, Z., Ibrahim, E., Abdelaziz, L., Hafez, B. Epidemiological Characteristics of Non-Hodgkin Lymphoma in Clinical Oncology and Nuclear Medicine Department in Zagazig University Hospitals (2013-2017). *Zagazig University Medical Journal*, 2022; (145-150): -. doi: 10.21608/zumj.2019.17056.1525