

Original article

Immunophenotypic study of non-Hodgkin lymphomas in adult and elderly patients at National Center of Hematology-Baghdad.

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Abstract:

Background: Non-Hodgkin lymphomas (NHL) are a heterogeneous group of lymphoproliferative malignancies with different patterns of behavior and responses to treatment. The understanding and histopathological diagnosis of NHL has improved with the use of advanced technology. The immunophenotyping of tumors of hematopoietic origin serves in the first place to distinguish these neoplasms from others, and to distinguish neoplasms from reactive processes.

Objectives: The aim of this study was to determine the percent of each category of NHL

Patients and Methods: Sixty eight patients who were diagnosed to have stage 4 non-Hodgkin lymphoma by histopathological examination of bone marrow aspirate and biopsy at National Center of Hematology/Baghdad were subjected to immunohistochemistry examination, two cases diagnosed as hairy cell leukemia by histopathological examination but not by immunohistochemistry as there were no CD markers available at the time of study so they were discarded from this study. Immunohistochemistry was done either in hospital or in private laboratory for proper subtyping of the disease and yet to receive correct therapy and better response.

Results: Cases were diagnosed as follows

B-cell lymphoma constitute	57 cases	86.36%
T-cell non-hodgkin lymphoma	6 cases	9.09%
Splenic lymphoma	1 case	1.5%
Mantle cell lymphoma	2 cases	3.03%

Conclusion: Immunohistochemical study is a specific method to aid histopathology in proper diagnosis and subtyping of non-Hodgkin lymphoma

Key words: immunophenotype, Non-Hodgkin lymphoma (NHL), National Center Of Hematology

Introduction:

In the last few decades, Lymphoma appears to be an increasing health problem all over the world, it is a common malignancy of lymphoid tissue affecting both children and adults, in the Middle East. Non-Hodgkin lymphoma (NHL) appears to be increasing in incidence, as it was to be (7%) of total cancer percentage¹ as compared to 4% in USA²

Classification system: NHLs are a heterogeneous group of lymphoproliferative malignancies with different patterns of behavior and responses to treatment. NHL comprises many subtypes each with distinct epidemiology, etiology, morphologic, immunophenotype and clinical features^{3,4}

The understanding and histopathological diagnosis of NHL has improved with the use of advanced technology. New pathologic entities have been described and understanding diagnosis and treatment of previously described pathologic subtypes which have been changed over the years, as a result classification of lymphomas had undergone significant reassessment over the past 40 years and classification system are continually being refined and developed⁴.

In 1981 the international working formulation (IWF) was introduced as a translational system to unify descriptive terminology and facilitate comparisons across the different classification systems for lymphoma including the Rappaport and Kiel system^{5,6} as shown in table 1.

Most clinical trials of lymphomas that were published in major international journals in the 1980s and 1990s/ used the IWF either alone or in combination with another classification system.⁶

In 1994 the REAL classification defined lymphoma using a list of biologic entities as clinic-pathologic and immunogenic features. The WHO/REAL classification system includes not only lymphoid, / histiocytes and mast cell neoplasms.⁶

More recent updates to this system also better reflect our understanding of disease entities and their relationship to the immune system.⁷

In 2008 WHO classification was reviewed and updated modifications in this review reflected clinical and laboratory insights which are helping to further define borderline categories of the disease⁵ as shown in table 2

Diagnosis:

Diagnosis of NHL is made by conventional histopathology examination mostly on section of formalin, fixed in paraffin embedded tissue (which is bone marrow aspirate and biopsy in this study collectively and fixation by Bouins solution) conventional histopathology and cytology are currently being extended by adopting other histologic techniques such as

immunohistochemistry⁸⁻¹⁰ which is periodically available in Iraq .

The immunophenotyping of tumors of hematopoietic origin serves in the first place to distinguish these neoplasms from others^{11,12}, and to distinguish neoplasms from reactive processes^{9,10}.

Materials and methods:

This study included (66) newly obtained Bone marrow (B.M) aspirates and biopsies from patients referred to National Center of Hematology, Almustansiriya University, and Baghdad during the period from 18 January 2010 to 23 June 2014 for suspicion of having non-Hodgkin lymphoma as they presented with lymph node enlargement with or without peripheral lymphocytosis.

The routine analysis included the following investigations:

- 1- CBP with blood film and ESR.
- 2- Cytochemistry done especially liver function test, renal function test, lactate dehydrogenase, and serum uric acid.
- 3- BM aspirates slides are done immediately and examined after doing leishman stain, while B.M. biopsies are preserved in bowns solution for 1-2 days and then paraffin blocks are made, slides are prepared and stained by hematoxyline-eosin and examined.

Further slides are done using positive charged slides for immunohistochemistry staining which was done for confirmation of diagnosis and subtyping, using kit from

(DAKO- LC dakopath, Copenhagen, Denmark).(12)

Immunohistochemical studies were selectively performed either in Alyarmook hospital or in private laboratory and solve two problems:

1-Unavailability of CD markers at time of study.

2-Cost of each CD marker is too expensive for most of our patients.

Immunohistochemical study done for two purposes:

1-To confirm diagnosis of NHL and their subtypes whether they are T- cell or B- cell and other subtypes of NHLs.

2-For therapy purposes as to add the drug Rituximab for B-cell NHL, according to Iraqi M.O.H. regulation.

Results:

This study included 66 cases of NHL, their age ranged between 25 years to 72 years (mean 43 years, median age = 48.2 years), males 44, females 22 with M: F ratio of 2:1.

B-cell lymphoma constitute	57 cases
86.36%	
T-cell lymphoma constitute	6 cases
9.09%	
Splenic lymphoma	1 case
1.52%	
Mantle cell lymphoma	2 cases
3.03%	

Conclusion:

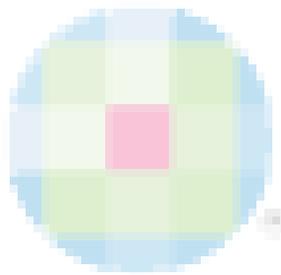
NHL is mostly a B-cell subtype and to lesser extent T-cell subtype, but other subtypes to lesser extent and due to unavailability of immunohistochemistry in Iraq we might miss their real percentage.

Recommendation:

1-MOH has to continuously supply hospitals immunohistochemistry kits and with flow cytometry machines which would help for easier and proper diagnosis.

2-Provides scholarships for training personal (doctors and technicians) on these new technique of diagnosis.

3-MOH must support wide scale similar studies all over the country to estimate real percentage of the disease in children, adults and elderly people in Iraq.



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