Krystyna Gałązka[1], Joanna Szpor[1], Renata Maryniak[2], Włodzimierz Olszewski[3], Olga Mioduszewska[3], Jerzy Stachura[1]

Incidence of lymphomas in Poland. The National Register Data for 2006*

[1]Department of Clinical and Experimental Pathomorphology, Chair of Pathomorphology, Collegium Medicum, Jagiellonian University, Kraków,
[2]Division of Pathomorphology, Institute of Haematology and Transfusiology, Warszawa,
[3]Department of Pathology, Centre of Oncology–Maria Curie-Skłodowska Institute, Warszawa

In Poland, data on the incidence and mortality associated with malignancies are collected by the National Cancer Register (NCR). The Register is based on the International Classification of Diseases (ICD-10), which does not allow for assessing the incidence of lymphatic neoplasms classified according to the WHO classification system enforced since 2001 [1].

Under the National Program of Combating Neoplastic Diseases that focuses on detection and diagnosing malignant lymphomas in Poland in order to record and precisely classify lymphatic neoplasms, in 2006, the Haematopathological Section of the Polish Society of Pathologists, acting in collaboration with the Polish Lymphoma Study Group, initiated a nationwide register of lymphatic malignancies, a continuation of the Register of Lymphomas for the Province of Małopolska. The register not only renders epidemiological data more specific, but also allows for a comprehensive quality control.

Material and Methods

The program included 26 departments of pathology, where diagnostic management of lymphomas was carried out. The pathologists involved in the diagnostic process would send report forms on patients examined in these centres to the Chair of Pathomorphology, Collegium Medicum, Jagiellonian University in Krakow. The form was developed by the Haematopathological Section of the Polish Society of Pathologists and the Polish Lymphoma Study Group and included personal data of the patient, basic clinical findings and histopathological results with the diagnosis based on the WHO 2001 classification, type of the evaluated material and results of supplementary tests (immunohistochemistry and possibly flow cytometry or molecular studies). The list of centres and the number of forms dispatched are presented in Table 1.

The results were compared to data originating from the National Cancer Register of 2004 (NCR 2004) [2], having been previously reclassified in agreement with the 10th Revision of the International Classification of Diseases and Related Health Problems (1994), as well as in keeping with data derived from the United States National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program [3].

Results

The total number of forms sent to the National Register of Lymphatic Neoplasms (NRLN) in 2006 reached 5201. Taking into account the fact that 13.1% of the forms were duplicated, the estimated number of patients reported to the register was 4518.

In 83.8% (4361) of the forms, the diagnoses were reported in agreement with the WHO classification; in the remaining 16.2% (840) forms, the reported diagnoses were outside the said classification. The distribution of incidence and the number of particular disease entities according to data originating from NRLN are illustrated in Table 2. The most common lymphatic neoplasm in Polish population was chronic lymphocytic leukaemia/small lymphocytic lymphoma (CLL/SLL), followed in descending order by

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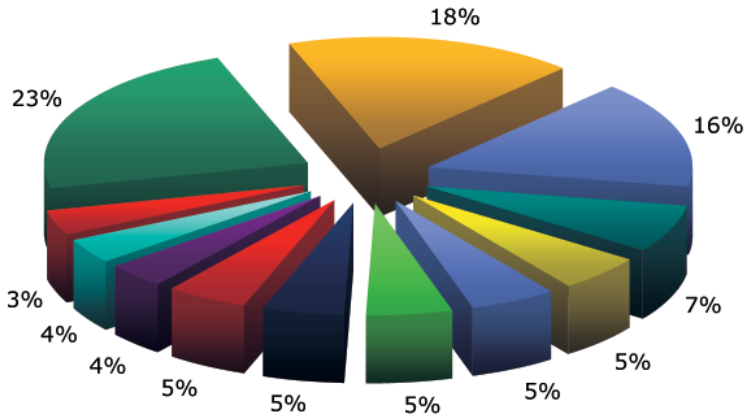
TABLE 1
Numbera of report forms sent by centres participating in the program



Centre	Number	Percentage
Department of Clinical and Experimental Pathomorphology, Chair of Pathomorphology, Collegium Medicum, Jagiellonian University, Krakow	922	17.7 %
Department of Pathology, Centre of Oncology – Maria Curie-Skłodowska Institute, Warsaw	811	15.6 %
Division of Pathomorphology, Institute of Haematology and Transfusiology, Warsaw	364	7.0 %
Chair and Department of Clinical Pathomorphology, Medical Academy, Lublin	274	5.3 %
Chair and Department of Pathomorphology, Silesian Medical Academy, Katowice	273	5.2 %
Division of Tumour Pathology, Maria Skłodowska-Curie Wielkopolskie Centre of Oncology, Poznań	271	5.2 %
Medical Academy, Warsaw	260	5.0 %
Department of Pathology, Chair of Oncology, Medical University, Łódź	253	4.9 %
Department of Pathomorphology, Chair of Pathology, Faculty of Medicine, Pomeranian Medical Academy; Szczecin	194	3.7 %
Department of Tumour Pathology, Świętokrzyskie Centre of Oncology, Kielce	189	3.6 %
Department of Tumour Pathology, Centre of Oncology, Maria Skłodowska-Curie Institute, Gliwice	181	3.5 %
Others – below 3 %:		
Division of Pathomorphology, Province Specialist Hospital, Olsztyn	137	2.6 %
Chair and Department of Pathomorphology, Medical Academy, Wrocław	135	2.6 %
Department of Pathomorphology, Beskidzkie Centre of Oncology in Bielsko-Biała	130	2.5 %
Chair and Department of Clinical Immunology, Medical Academy, Poznań	115	2.2 %
University Centre of Pathomorphological Diagnostic Management in Białystok; Białystok	109	2.1 %
Private Practice in Histopathology „HIST-PAT"; Poznań	109	2.1 %
Department of Tumour Pathology, Centre of Oncology, Maria Skłodowska-Curie Institute, Krakow Branch, Krakow	108	2.1 %
Department of Tumour Pathology, Centre of Oncology, Bydgoszcz	92	1.8 %
Department of Pathomorphology, Dolnośląskie Centre of Oncology, Wrocław	75	1.4 %
Chair and Department of Clinical Pathomorphology, Medical Academy, Poznań	74	1.4 %
Department of Pathology, St. Adalbert Specialist Hospital, Gdańsk	45	0.9 %
Cieszyński Centre of Pathomorphology Intra NZOZ S.C.; Cieszyn	41	0.8 %
Division of Histopathology, Department of Pathological Anatomy, Province Specialist Hospital, Częstochowa	19	0.4 %
Department of Pathomorphology, Province Hospital, Gorzów Wielkopolski	6	0.1 %
Chair and Department of Clinical Pathomorphology, University Hospital, Bydgoszcz	5	0.1 %
Total:	**5192**	

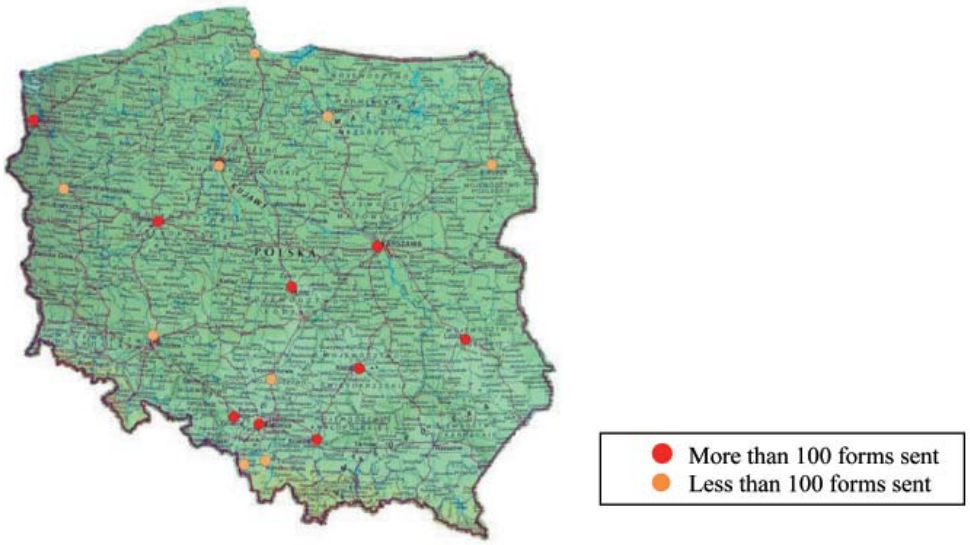
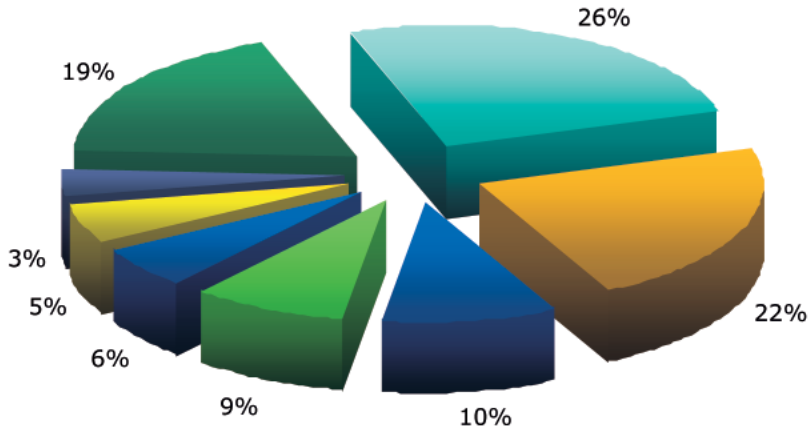


TABLE 2
Incidence of lymphatic neoplasms diagnosed according to WHO (NRLN)



- Chronic lymphocytic leukaemia/small lymphocytic lymphoma (CLL/SLL)
- Diffuse large B-cell lymphoma (DLBCL)
- Plasma cell myeloma
- Nodular sclerosis classical Hodgkin lymphoma (NSHL)
- Mantle cell lymphoma (MCL)
- Follicular lymphoma (FL)
- Extranodal marginal zone B-cell lymphoma of mucosa-associated lymphoid tissue (MALT-lymphoma) (MALT)
- Others - below 3%

Name according to WHO classification	Number	Percentage1	Percentage 2
Chronic lymphocytic leukaemia/small lymphocytic lymphoma (CLL/SLL)	1121	25.7 %	21,6 %
Diffuse large B-cell lymphoma (DLBCL)	975	22.4 %	18,7 %
Plasma cell myeloma	441	10.1 %	8,5 %
Nodular sclerosis classical Hodgkin lymphoma (NSHL)	380	8.7 %	7,3 %
Mantle cell lymphoma (MCL)	245	5.6 %	4,7 %
Follicular lymphoma (FL)	233	5.3 %	4.5 %
Extranodal marginal zone B-cell lymphoma of mucosa-associated lymphoid tissue (MALT-lymphoma) (MALT)	151	3.5 %	2.9 %
Others – below 3 %:			
Mixed cellularity classical Hodgkin lymphoma (MCHL)	85	1.9 %	1.6 %
Hairy cell leukaemia (HCL)	83	1.9 %	1.6 %
Anaplastic large cell lymphoma (ALCL)	64	1.5 %	1.2 %
Lymphoplasmacytic lymphoma (LDL)	53	1.2 %	1.0 %
Classical Hodgkin lymphoma (CHL)	50	1.1 %	1.0 %
Peripheral T-cell lymphoma. unspecified (PTCL-U)	47	1.1 %	0.9 %
Precursor B lymphoblastic leukaemia/lymphoma (LBL-B)	44	1.0 %	0.8 %
Splenic marginal zone lymphoma (SMZL)	44	1.0 %	0.8 %
Precursor T lymphoblastic leukaemia/lymphoma (LBL-T)	39	0.9 %	0.7 %
Nodal marginal zone B-cell lymphoma (NMZL)	37	0.8 %	0.7 %
Burkitt lymphoma (BL)	37	0.8 %	0.7 %
Mediastinal (thymic) large B-cell lymphoma (Med.-DLBCL)	34	0.8 %	0.7 %
Nodular lymphocyte predominant Hodgkin lymphoma (NLPHL)	30	0.7 %	0.6 %
Mycosis fungoides	29	0.7 %	0.6 %
Lymphocyte-rich classical Hodgkin lymphoma (LRHL)	25	0.6 %	0.5 %
Monoclonal gammopathy of undetermined significance (MGUS)	23	0.5 %	0.4 %
Angioimmunoblastic T-cell lymphoma (AILT)	13	0.3 %	0.2 %
Extraosseous plasmacytoma	8	0.2 %	0.2 %
Langerhans cell histiocytosis (LCH)	8	0.2 %	0.2 %
Lymphocyte-depleted classical Hodgkin lymphoma (LDHL)	8	0.2 %	0.2 %
Primary cutaneous anaplastic large cell lymphoma (C-ALCL)	6	0.1 %	0.1 %
Blastic NK cell lymphoma	5	0.1 %	0.1 %
Composite lymphoma	5	0.1 %	0.1 %
Hepatosplenic T-cell lymphoma	5	0.1 %	0.1 %
Enteropathy-type T-cell lymphoma	4	0.1 %	0.1 %
T-cell large granular lymphocytic leukaemia (T-LGL)	3	0.1 %	0.1 %
Cutaneous follicle centre lymphoma (PCFCL)	3	0.1 %	0.1 %
Solitary plasmacytoma of bone	3	0.1 %	0.1 %
Extranodal NK/T cell lymphoma. nasal type	2	0.0 %	0.0 %
Aggressive NK cell leukaemia	2	0.0 %	0.0 %
Mast cell leukaemia	2	0.0 %	0.0 %
Subcutaneous panniculitis-like T-cell lymphoma (SPTCL)	2	0.0 %	0.0 %
B-cell prolymphocytic leukaemia (B-PLL)	2	0.0 %	0.0 %
Burkitt leukaemia (BL)	2	0.0 %	0.0 %
Systemic mastocytosis with associated clonal. haematological non-mast cell lineage disease (SM-AHNMD)	1	0.0 %	0.0 %
Histiocytic sarcoma	1	0.0 %	0.0 %
Sezary syndrome	1	0.0 %	0.0 %
Lymphomatoid granulomatosis (LYG)	1	0.0 %	0.0 %
Adult T-cell leukaemia/lymphoma (ATLL)	1	0.0 %	0.0 %
Cutaneous marginal zone B-cell lymphoma	1	0.0 %	0.0 %
Lymphomatoid papulosis	1	0.0 %	0.0 %
Burkitt lymphoma/leukaemia (BL)	1	0.0 %	0.0 %
Total:	**4361**		**84 %**

Percentage1 – defines the percentage of lymphoma among lymphomas classified according to WHO
Percentage2 – defines the percentage of lymphoma among all lymphomas

TABLE 3
Comparison of the number of cases and their relative incidence in neoplasms divided into Hodgkin lymphomas, non-Hodgkin lymphomas, lymphocytic leukaemias and plasma cell myelomas based on data derived from NCR 2004 and NRLN 2006

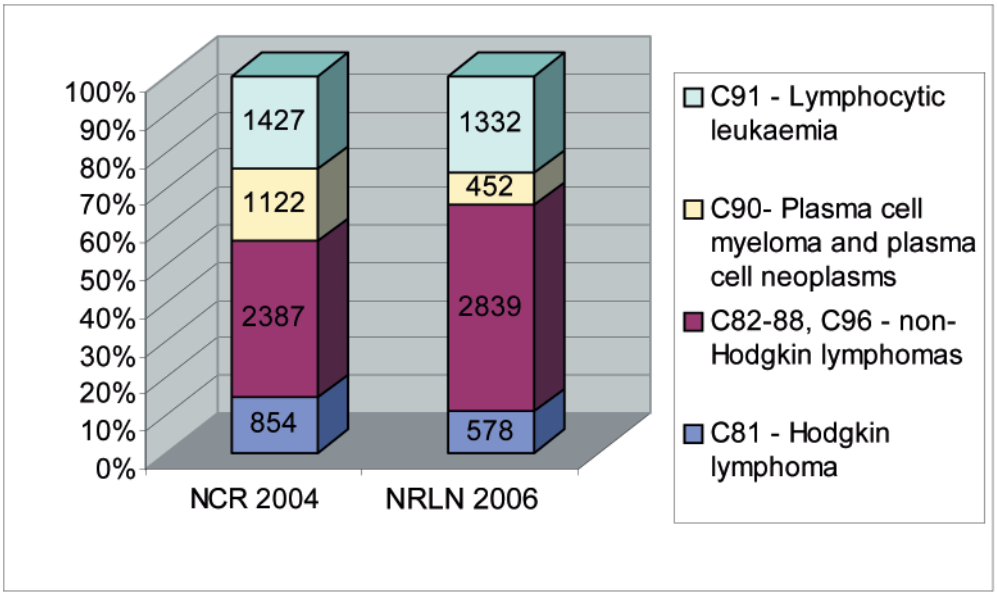


TABLE 3a
Detailed comparison of the number of lymphatic neoplasms according to ICD-10 based on data derived from NCR 2004 and NRLN 2006

Diagnosis according to ICD-10	NCR 2004	NRLN 2006
C81 – Hodgkin lymphoma	854	578
C82 – Non-Hodgkin lymphoma, follicular	180	236
C83 – Non-Hodgkin lymphoma, diffuse	981	1010
C84 – Peripheral and skin T-cell lymphoma	136	180
C85 – Non-Hodgkin lymphoma, other and undiagnosed	983	1409
C88 – Malignant lymphoproliferative diseases	51	
C90- Plasma cell myeloma and plasma cell neoplasms	1122	452
C91 – Lymphocytic leukaemia	1427	1332
C96- Other, unspecified	56	4
TOTAL	5790	5201

TABLE 4
Comparison of the relative incidence of main lymphatic neoplasm groups based on data derived from SEER and NRLN

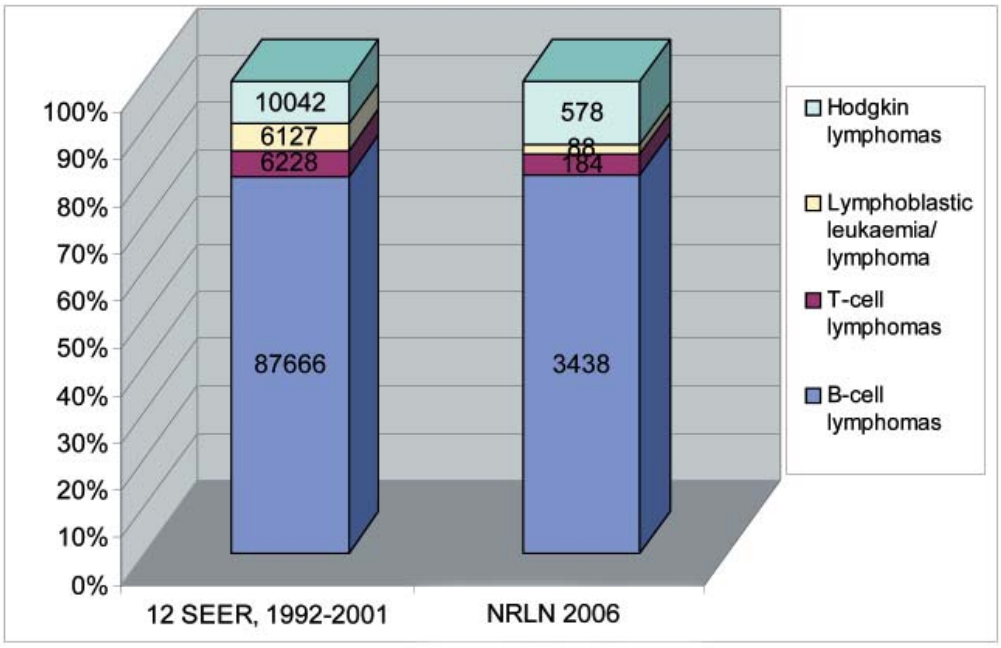
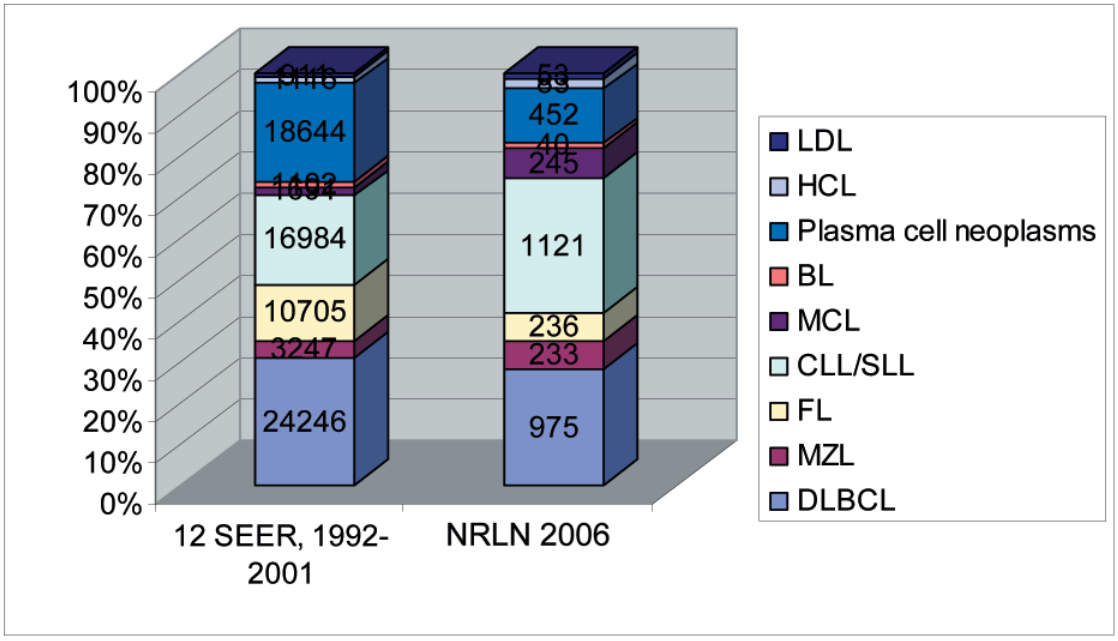
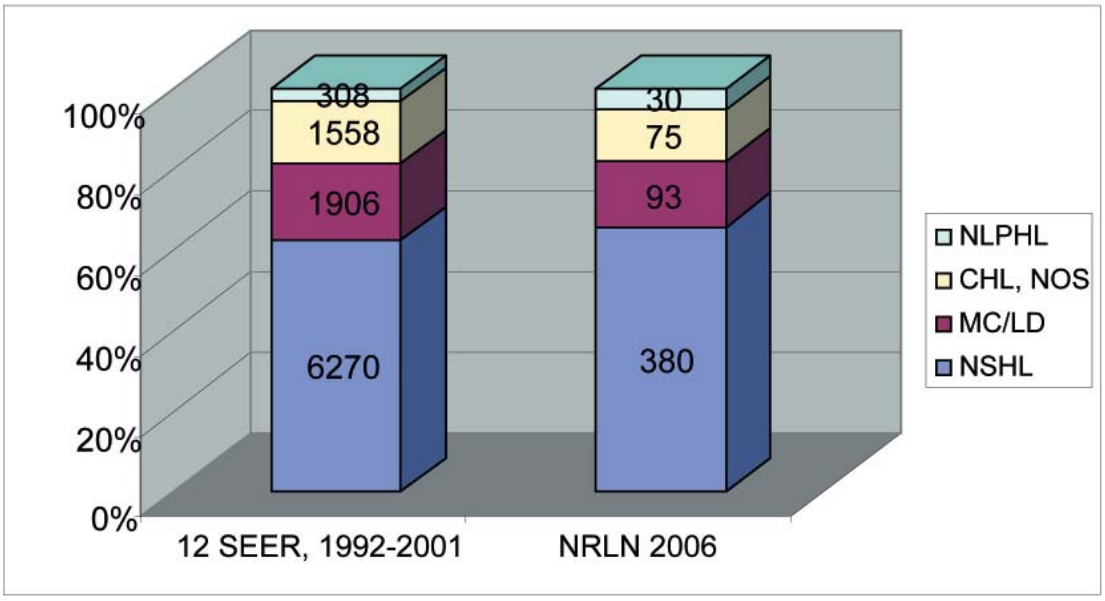


TABLE 5
Comparison of the relative incidence of B-cell lymphomas based on data derived from SEER and NRLN



LDL-Lymphoplasmacytic lymphoma
HCL- Hairy cell leukaemia
BL- Burkitt lymphoma/leukaemia
MCL- Mantle cell lymphoma
CLL/SLL- Chronic lymphocytic leukaemia/small lymphocytic lymphoma
FL- Follicular lymphoma
MZL- Extranodal marginal zone B-cell lymphoma of mucosa-associated lymphoid tissue (MALT-lymphoma) and nodal marginal zone B-cell lymphoma
DLBCL- Diffuse large B-cell lymphoma

TABLE 6
Comparison of the relative incidence of Hodgkin lymphomas based on data derived from SEER and NRLN



diffuse large B-cell lymphomas (DLBCL) and plasma cell myelomas.

On the other hand, the National Cancer Register reported 5790 new cases of lymphatic neoplasms in 2004 [2].

The comparison of the number and relative incidence of lymphatic neoplasms according to NCR and NRLN is presented in Tables 3 and 3a.

A striking observation is a considerably lower number of plasma cell neoplasms reported to NRLN.

On the other hand, the number of Hodgkin lymphomas and lymphocytic leukaemias (C91) is comparable, when the number of patients and the percentage of histopathologically confirmed diagnoses is taken into account (0.89 and 0.69, respectively).

Nevertheless, similarly as in the previous report by the Register of Lymphomas for the Province of Małopolska [4], the number of non-Hodgkin lymphomas is lower in NCR as compared to NRLN.

The presented compilation of data does not allow for a precise comparison of the incidence of particular disease entities, since the International Statistical Classification of Diseases and Health Related Problems makes it impossible to classify 581 entities, which – despite careful classification according to the WHO criteria – fit only the C85 category (Non-Hodgkin lymphoma, other and undiagnosed).

The comparison of the relative incidence rates based on the WHO classification is possible, however, by comparing data originating from SEER (1992-2001) (Table 4).

The table indicates a similar incidence of B-cell and T-cell tumours in both registers, a lower incidence rate of ALL in NRLN and a higher - as compared to the American population – incidence of Hodgkin lymphomas.

Distinct differences are seen in the relative incidence of B-cell lymphomas (Table 5):

- In the American population, the most common lymphatic neoplasms are diffuse large B-cell lymphomas (DLBCL), while CLL/SLL are predominant in the Polish population,
- Plasma cell neoplasms and follicular lymphomas (FL) are more frequent in the American population,
- Marginal zone lymphomas (MZL) and mantle cell lymphomas (MCL) are more frequently seen in the Polish population.

The incidence of particular types of Hodgkin lymphoma (Table 6) is similar, but in the American population, a higher rate of the MC/LD type is noted, as well as a lower rate of NLPHL as compared to the Polish population.

Discussion

In the first year of NRLN operation based on the forms referred by histopathologists who had diagnosed new cases of lymphatic neoplasms, we managed to have 5201 forms reported. In our estimation, the program included approximately 80% of pathology departments nationwide that are involved in routine diagnostic management of lymphatic neoplasms. A higher number of cases found in the National Cancer Register of 2004 may be a result of higher reportability rates characteristic of this register, as well as the fact that NRLN disregarded lymphatic neoplasms that had not been diagnosed based on histopathology (e.g. CLL/SLL and plasma cell myelomas). The percentage of histopathological confirmations for new cases in the C81-C88, C90-91 and C96 categories lies within the range of 0.38-0.95 [2].

A phenomenon worthy of emphasizing is a considerably lower number of plasma cell tumours reported to NRLN, which may result not only from the lower reportability rate in comparison to NCR, but also from a less frequent involvement of a histopathologist in diagnosing these diseases. In keeping with the NCR data, the percentage of histopathologically confirmed diagnoses in this group is 0.75 [2]. In addition, some of these cancers have been reported as belonging to the group of diagnoses that is outside the WHO classification, and they have been included into other and unspecified types of non-Hodgkin lymphomas (C85).

A significant finding is the observation of a higher number of non-Hodgkin lymphomas as compared to NCR in spite of a lower number of patients reported to the above register. In particular categories of non-Hodgkin lymphomas (C82-C85), the rates were higher for each category included in NRLN (see Table 3a).

The register additionally allows for assessing the relative incidence of lymphatic neoplasms based on the WHO classification and for comparing their relative incidence with worldwide data. The thus disclosed differences allow for appropriate planning of financial resources necessary to treat patients with lymphatic neoplasms. Furthermore, the introduction of the register allows for initiating the mechanisms of consultation and quality control.

The authors wish to thank all who have participated in the program and have kindly sent report forms to the register.

References

1. *Jaffe E, Harris N, Stein H, Vardiman J (EDs.):* World Health Organization Classification of Tumours. Pathology and Genetics of Tumours of Haematopoietic and Lymphoid Tissues. IARC Press: Lyon 2001.
2. *Wojciechowska U, Didkowska J, Tarkowski W, Zatoński W:* Nowotwory złośliwe w Polsce w 2004 roku. Centrum Onkologii-Instytut im. Marii Skłodowskiej-Curie oraz http://epid.coi.waw.pl/krn.
3. *Morton L, Wang S, Devesa S et al:* Lymphoma incidence patterns by WHO subtype in the United States, 1992-2001. Blood 2006, 107, 265-276.
4. *Jurczak W, Rudzki Z, Gałązka K et al:* High Prevalence of Non-Hodgkin Lymphomas in Polish Population- 1106 New Cases Diagnosed according WHO Classification in Only One District. Pol J Pathol 2006, 57,1, 45-52.

Address for correspondence and reprint requests to:
Joanna Szpor
Department of Clinical and Experimental Pathomorphology
Chair of Pathomorphology
Collegium Medicum, Jagiellonian University
Ul. Grzegórzecka 16
31-531 Kraków