

## STUDY ON THE CYTODIAGNOSIS OF DIFFERENT SUBTYPES OF NON – HODGKIN'S LYMPHOMAS

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### INTRODUCTION

The term lymphoma describes a broad group of malignant tumors that affect blood cells with an immune role. Lymphomas can be localized in different tissues and are characterized by the absence at the onset of the disease of the leukemic ensemble (Popescu M. D., 2003).

There are 80 subtypes of lymphomas that killed around 42,500 people across Europe in 2012. Although discouraging, non-Hodgkin lymphomas have a fairly low cure rate 25%.

I mention that:

- non-Hodgkin's lymphoma (NHL) accounts for nearly 10 percent of childhood cancers under the age of 15;
- 60% of children's lymphomas are part of the NHL complex;
- the frequency of these lymphomas being M/F=3/1;
- more than 80% of children and adolescents with NHL will survive for at least 5 years with treatment (chemotherapy);
- NHL frequency varies considerably depending on geographical area; thus, in the equatorial zone of Africa we experience an increased incidence of Burkitt lymphoma (in children);
- in America, 800 new cases of NHL are diagnosed at a 12months period;
- statistically, a parallel increase in NHL and the number of AIDS cases were observed;
- among NHL about 85% are of B cellular origin; only 15% being derived from T cells or natural killer cells (NK);
- primary diffuse B-cell mediastinal lymphoma has a higher frequency in women.

Perhaps due to stress, unhealthy eating habits, external and genetic factors, the incidence and mortality of people with NHL have increased in recent decades in North America and Europe.

Researchers around the world associate NHL pathologies with:

- chromosomal translocations (t (14; 18) (q32;q21)), (t (11; 14) (q13; q32)), ((2; 5) (p23; Q35), (t (11; 18) (Q21; Q21)),t (1; 14) (p22, 132) (clinicaoncologieseveren.ro, 2016);

- infections with: Epstein-Barr virus (associated with Burkitt lymphoma, endemic form present mainly in Africa), hepatitis C virus, herpes virus, *Helicobacter pylori*;
- immune deficiencies: congenital (severe combined immunodeficiency disease, Wiskott-Aldrich syndrome) or acquired (AIDS);
- chronic inflammation;
- environmental factors.

As symptoms remember: increased temperature (fever,  $\square 38^{\circ}\text{C}$ ), night sweats, weight loss, weakness, fatigue, cytopenia, upper cave vein syndrome, leptomenige disease with cranial nerve paralysis, symptoms of intestinal obstruction, secondary obstructive hydronephrosis, splenomegaly, hepatomegaly, high-volume abdominal mass, rapidly growing lymphopathy, voluminous adenopathy. These symptoms depend on the subtype of NHL, the stage of the disease, the patient's health status, other diseases, etc.

Such a diagnosis is not easy to determinate. For this purpose, clinicians use several methods such as: X-rays, abdominal ultrasound, CT/MRI,  $\text{Ga}^{67}$  scintigraphy, PET, hemogram, bone marrow examination, immunology and biochemistry tests, biopsy.

### MATERIAL AND METHODS

This study focuses on laboratory examinations leading to the final diagnosis. The study was conducted between January 2020 and May 2020 on a sample of 111 people including 39 women and 72 men. 109 of the subjects live in the countryside while only two people live in urban areas. This paper aimed to diagnose, incidence and detect new NHL cases in the cities of Bacau and Onesti.

The data thus obtained capture the characteristics and condition of each subject's body before surgery, before the start of chemotherapy and radiotherapy and before the administration of medicines prescribed by the oncologist.

Two types of methods for obtaining data were used in the study:

- quantitative methods: a) complete haemoleukogram performed using the cellTAC MEK-8222 K automatic analyzer (hemoglobin,

haematocrit, number of hematitis, number of platelets and leukocytes, distinguishing 5 subtypes of leukocytes: neutrophils, basophils, eosiniphiles, lymphocytes and monocytes); b) counting of leukocytes using the CELL-DYN analyzer, which can also analyze the number of hematoids and platelets, hemoglobin and hematocrit.

- qualitative methods: the execution and staining of blood smears that provide important information, in a direct and effective way if there is suspicion of any pathology.

The study covered 4 NHL subtypes, namely:

- hairy cell leukemia (HCL);
- Burkitt lymphoma (BL);
- T-cell large granular lymphocytic leukemia;
- T-cell prolymphocytic leukemia (T-PLL).

## RESULTS AND DISCUSSIONS

Interpretations were performed on the environment of the people who took part in the study, sexes, age groups, leukaemia subtype and forms of leukemia.

The results of the environment of provenance are shown in Figure 1.

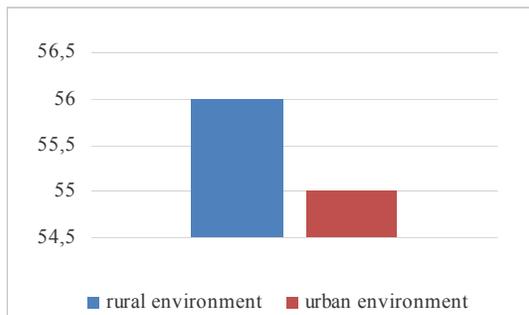


Fig. 1. Environment of origin of people

Of the people who took part in the study 56 live in rural environment while the remaining 55 live in urban environments.

Another important aspect is the gender distribution.

As can be seen from Figure 2 the male sex has a weight of 65% while the female sex has only 35%; thus I conclude that the forms of leukaemia found in the group of 111 people have a higher incidence in male individuals.

Studying the 111 subjects we found that 32% (the highest percentage, figure 3) of them are between the ages of 61 and 70; as expected according to the literature. At the opposite end, recording a very low percentage of only 2% of people are 81-90 years old.

In the age group 51-60 years there are 18%; 14% of participants are classified in category 71-80;

10% of people are children or adolescents/ young adults aged 0-20 years.

9% are 41-50 years old; 8% are aged 21-30 years; while 7% of participants are in the 31-40 year category.

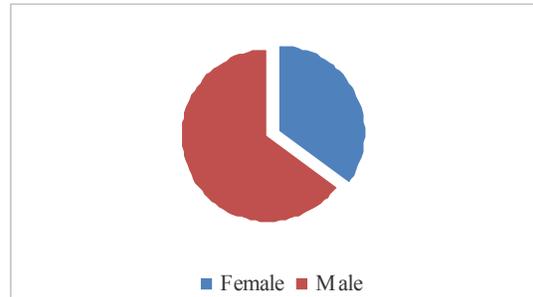


Fig. 2. Distribution by sex

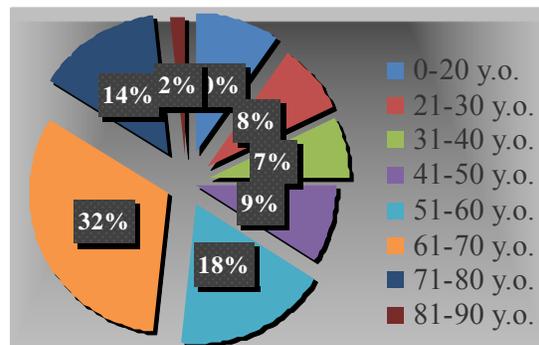


Fig. 3. Distribution by age group

Of all forms of leukemia 77% are chronic forms, which is discouraging; and the remaining 23% are acute.

From the entire batch the cases of leukemia are the following:

- 18% - 19 cases - acute myeloid leukemia;
- 12% - 13 cases - acute lymphoblastic leukaemia;
- 49% - 55 cases - chronic lymphoid leukemia;
- 18% - 20 cases - chronic myeloid leukemia;
- 3% - 4 cases - hairy cell leukemia.

It should also be noted that the neoplastic cells located in the hematopetic bone marrow divide erratically and thus the other cell series (thrombocyte and erythrocytes) can no longer develop naturally. We translate this through anemia and bleeding.

The forms studied in this paper are rare, difficult to diagnose, and there are cases – such as this one – when studies with a much larger number of people as a test group do not identify any such case.

Although the lives of patients with leukaemia in Romania are not easy there are organisations that help these people.

Table 1 shows the characteristics of the four people with hairy cell leukemia.

Table 1. Characteristics of people with hairy cell leukaemia

Environment	Sex	Age	Leukocytes (x 10 <sup>3</sup> /mm <sup>3</sup> )	Neutrophils %	Eosinophils %	Basophils %	Lymphocytes %	Monocytes %	Observations
Urban	M	67	3,5	34	-	-	60	6,6	48% of lymphocytes have cytoplasmic extensions
Urban	M	71	4,4	30	1	-	62,7	7,8	cytoplasm with foamy appearance, peripheral nucleus, cells with cytoplasmic extensions
Urban	M	70	4,3	30	1	-	62	7	50% of lymphocytes have cytoplasmic extensions, cells have a foamy appearance
Urban	M	68	3,8	34	-	-	60	6	40% of lymphocytes have cytoplasmic extensions

### CONCLUSIONS

The following studies revealed:

- the incidence of leukemia is almost twice as high in men, 65%;
- of the 4 people with hairy cell leukemia (HCL) only 3 fall into the age group 61-70 years; and one person is 71 years old;
- chronic types of leukaemia are gaining more and more ground by registering 77%;
- HCL is a rare subtype of NHL, evidence stand the 4 cases recorded in this study;
- most cases (55) have chronic lymphoid leukaemia 49%; and the fewest cases (4) have HCL.

### ABSTRACT

Between January 2020 and May 2020 I conducted a study aimed at identifying 4 subtypes of non-Hodgkin lymphoma (hairy cell leukemia, Burkitt lymphoma, T-cell large granular lymphocytic leukemia, T-cell prolymphocytic leukemia).

The sample was sampled by 111 people, women and men between the ages of 5 and 81.

Interpretations were made by sex, by age group, by type of leukemia, on the chronic or acute side; and in patients with HCL we have detailed the information on laboratory examinations for an overview.

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