Further Abstracts

1. Epidemiology/Pathology

The Validity Of The International Prognostic Index (IPI) In Egyptian Adult Non-Hodgkin Lymphoma
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Introduction: At the present time the IPI stratifies adult NHL into four risk groups corresponding to the number of adverse parameters. The purpose of this retrospective analysis was to evaluate the relationship of IPI and the outcome of a large series of Egyptian adult NHL.

Methods: Retrospective analysis of adult NHL patients referred to two major oncology centers in Egypt. The studied parameters were: age, histology (Real classification), Ann arbor stage, B symptoms, PS (ECOG), bulky disease (>5cm), extranodal sites, serum LDH level, and IPI scores. The correlation was to be assessed between these parameters and the therapeutic outcome as regards the treatment modality, response, time to disease progression and survival data.

Results: From 1996 to 1999, 467 patients were recruited with a median age of 45 years (range 18-81), 37% had B symptoms & elevated LDH, 25% had bulky disease, 17.5% had PS >2. DLC (45%) was the most frequent pathology. 45% of cases presented with stages I/II & IV. 45% had IPI (0-1) while 59% had IPI (2-5). The overall response rate was 63.5% (CR=47%). At median follow up period of 27m (6-50 m), relapse rate was 17% with 44% of patients alive free. Statistical analysis is still under process to assess the clinical and parameters in univariate and multivariate regression analysis.

Conclusion: In Egypt, adult NHL expresses a more aggressive behavior compared to the western profile whether this can influence the validity of the IPI parameters as regards the outcome in our Egyptian series is to be clarified.

INCIDENCE OF LYMPHOMA ACCORDING TO THE REAL CLASSIFICATION, IN A CAPTIVE POPULATION FROM ARGENTINA

Introduction: From January 1993 to December 1998, 378 new Lymphomas (according to REAL), excluding plasmacytoma/plasma cell myeloma, were diagnosed in our center in which Argentineans from employees and relatives are assisted (about 400000 inhabitants all over the country), therefore, we consider it a representative sample of our country. The majority of our population has Italian and Spanish origin.

Material and Methods: In this six-year period, the incidence of non-Hodgkin Lymphoma (334 patients) and Hodgkin Lymphoma (44 patients), was 13.9 and 1.8 cases/100000 inhabitants per year, respectively. The incidence of B-cell Lymphoma was 90%, while only 9.5% of the population displayed T-cell phenotype.

Results: Two hundred and two patients (111 males and 91 females) with diagnosis of low-grade B cell lymphomas were admitted in this six-year period. The calculated crude incidence was 8.3/100000-inhabitants/year. Male/Female ratio was 1.2, with a mean age of 72 years (18-90).

The incidence of chronic lymphocytic leukemia/ small lymphocytic lymphoma / prolymphocytic leukemia (CLL/SLL/PLL) was 23.7%, follicular lymphoma (FL): 26% and lymphoblastoid lymphoma (LPL): 13%. Marginal zone lymphoma represented the 4% of all patients, nodal (MZL) : 0.3%, extranodal (MALT): 2.5% and splenic with villous lymphomas (SMZL): 1%. Mantle cell lymphoma (MCL) and hairy cell leukemia (HCL) had an incidence of 2% and 3%, respectively. Diffuse large B cell lymphoma represented 27% while primary mediastinal large cell and anaplastic large cell was 1.5% each. Peripheral T cell unspecified were the most common variant (9%) between T cell lymphomas.

In the same period, Hodgkin Lymphoma (HL) was diagnosed in 44 pts. Male/Female ratio was 1.5, with a mean age of 48 years (26-78). The most common HL variant 17/44 (39%), mixed cellularity, lymphocyte predominance and lymphocyte depleted accounted for 29%, 25% and 7% respectively.

Conclusion: The incidence and histologic patterns found in this institutional population can be considered representative of Lymphoma incidence in Argentina. It is comparable to the incidence of Lymphomas in European countries of Latin origin. On the other hand, this incidence differs from other Latin American countries with large population of natives: in these countries T-cells malignancies are more frequent, as in Oriental origins.

CASE-CONTROL STUDY OF THE RISK FACTORS OF NON-HODGKIN'S LYMPHOMA IN FRANCE (EPILYMPH)
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Introduction: The incidence of lymphomas increases in France as well as in Europe and other developed countries. In order to determine the risk factors which could explain this small increase, we conducted a case-control study in three French areas (Côte d’Or, Somme and Hérault). This study is part of the European study conducted in seven countries under the IARC coordination.

Methods: Cases were patients newly diagnosed with lymphoid neoplasms and controls were patients hospitalised matched on age, sex and residential area. A questionnaire was conducted regarding numerous aspects of the life of the subject and specialised professional questionnaires were used. Biological samples were obtained to perform virological studies. Cases were diagnosed according to the REAL classification and a 20% randomly selected sample was reviewed by an expert committee.

Results: The first inclusion was made in April 2000 and an intermediate analysis was performed on 285 subjects (187 cases and 98 controls). The median age was 59 years in men and 54 years in women. Among cases they were 12% of Hodgkin’s disease, 15% of multiple myeloma, 35% of NHL, 26% of chronic lymphocytic leukemia, 6% of T NHL, 4% of hairy cell leukemia and 2% of acute lymphoblastic leukemia. In a first univariate analysis some factors appear to be significant: i.e. asthma, a great number of illness, level of education, travels and wine consumption. Others were not significant like familial history, urban or rural status, vaccines, tobacco.

Conclusion: This intermediate analysis gives us some results that will need to be confirmed by detailed analysis and compared to biological status of cases and controls.

PARENTAL LONGEVITY AND PROGNOSIS IN ELDERLY PATIENTS WITH NON-HODGKIN'S Lymphoma
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Background: In general, elderly patients with aggressive non-Hodgkin's lymphoma (NHL) have a less favorable prognosis than younger patients. Established predictors of prognosis in NHL are less appropriate in the elderly population why there is an urgent need for additional markers giving guidance to treatment decisions and predictions of outcome. The expected length of life of an individual in the general population is intimately associated with that of his/her parents. The aim of this study was to test the hypothesis that parental longevity is associated with improved outcome in a well-defined cohort of elderly patients with aggressive NHL, and potentially identify an easily accessible non-disease associated prognostic factor in this patient population.

Patients and methods. 220 patients (>60 years) with aggressive NHL, with a median age of 71 years (range 60-86 years) were included. Patients were randomised to receive CHOEP or CHOP (doxorubicin replaced by mitoxantrone) chemotherapy with or without the addition of granocyte colony-stimulating factor. The median follow-up time was 56 (19-89) months. Parental data regarding age at death were available through parish offices for 422 (97%) of patients. Relative risk (RR) of death (disease-specific and all-cause) associated with parental life-span was assessed using Cox proportional hazards regression analyses, with adjustment for sex, age, prognostic index, symptoms and calendar period of diagnosis.

Results. Maternal lifespan below (versus above) median was associated with a borderline significant reduced disease-specific (adjusted RR of death from NHL of 0.8 [0.3-1.0]) and overall survival. The effect of maternal lifespan was somewhat more pronounced in patients receiving CHOEP than CHOP treatment. Paternal lifespan below the median was associated with a borderline significant increased disease-specific (adjusted RR of death from NHL of 1.3 [0.9-1.9]) and overall survival. Combined, maternal and paternal lifespan had little impact on survival. These effects were true also when CHOEP and CHOP treated patients were analysed separately.

Conclusion. Maternal and paternal lifespan both influence survival in NHL, but with opposing effects.
CAUSES OF DEATH AFTER EXTRANODAL Lymphoma:
IS THERE AN EXCESS RISK FOR OTHER CANCERS?
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Introduction: Primitive extranodal lymphomas have a relative good survival (if compared to nodal presentations). But not nearly the cause of death is another cancer. The number of that cases seems in a single center along 15 years is the topic of this paper.

Methods: Patients were accuracy diagnosed, staged and treated with appropriate protocols of surgery and/or radio-chemotherapy. The survival probability was analyzed with actuarial methods as Overall (OS), Cause Specific (CSS) and Relapse-Free (RFS).

Results: Of 249 cases the 5 years OS, CSS and RFS are respectively 79.1%, 85.5% and 64.9% for 109 people 550 years old and 48.8%, 62.4% and 46.1% for 140 older (Mantel-Cox p<0.0000). If analyzed by primitive site of disease, the 5 years OS were respectively 62.3% for 27 mediastinal localizations with 5 Tumor Related Death (TRD) and no Death From Other cause (DFO), 59.3% for 59 gastrointestinal patients with 15 TRD and 15 DFO, 53.1% for 63 Ear-Nose-Throat patients with 20 TRD and 12 DFO, 71.1% for 62 skin/adnexa localizations with 18 TRD and 5 DFO, 100% for 6 primitive lymphoma of the skin with 1 TRD and 1 DFO, 59.7% for 33 Obh cases with 12 TRD and 2 DFO.

Among 249 patients, 71 died from lymphoma and 35 from other cause. Twenty-three (69%) of those last died from another cancer, some of which synchronous or diagnosed before the NHL, other metastatic as detailed thereafter. Nine from lung cancer (including one case of carcinoid, and another with concomitant renal cancer), 4 from gastric cancer (one of which actually died from car accident), 4 from hepatic carcinoma (one had a story of viral hepatitis and 3 of liver cirrhosis), and one from each from the following cancers: breast, bladder, rhinopharynx, leiomyosarcoma, melanoma, and acute lymphoid leukemia. The remaining 12 (34%) death cause other than Lymphoma were: myocardial infarction (3), brain stroke (4), diabetes (1), hypertensive cardiopathy (1), BPCO (2) and unknown (1).

Conclusions: Even considering that some extranodal lymphoma share the same known local risk factors with epithelial cancers - for example we observed two cases of gastric NHL and cancer - and the treatment done, the secondary neoplasia rate seems high. This observation may suggest to verify the hypothesis of an excess risk of other cancers associated with extranodal NHL patients and eventually look for other common risk factors.

FAMILIAL AGGREGATION OF Lymphoma IN EGYPT
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Introduction: Lymphoma is the second most common cancer in Egypt, after bladder cancer, accounting for 10% of all patients presenting to the National Cancer Institute of Cairo University (NCI-Cairo). Environmental and genetic factors are suspected in the etiology of this prevalent cancer. We grouped familial and occupational exposure as possible risk factors for this disease. In this study, we focus on familial aggregation.

Methods: We conducted detailed interviews with 104 newly-diagnosed lymphoma patients (age range: 22-73 years) seen at the medical oncology clinics of NCI-Cairo from November 2001 to January 2002. We also interviewed 104 age- and sex-matched hospital controls admitted to Cairo University hospital for non-cancer conditions. We collected information about each of the subjects' first-, second-, and third-degree relatives who had history of cancers.

Results: 15 patients (15%) and 4 controls (4%) had first- or second-degree relatives with cancer (P=0.001). 2 patients (2%) and no controls (0%) had first- or second-degree relatives with lymphoma (P=0.001).

Lymphoma Survival Trends in Yorkshire, UK 1984-1995

Introduction: The Leukemia Research Fund Centre (LRFC) holds a specialist population based registry which requires 100% histological confirmation. All diagnoses are coded using KIEL and REAL classifications. This study required linkage with a national register held at the Office of National Statistics (ONS). ONS receives routine notifications of death from UK National Health Service Central Register (NHSCR). Crude survival estimates were obtained for three disease groupings (Diffuse Large B Cell NHL, Follicle Centre Cell and Myeloma) over the period 1984-1995 and analyses were limited to one UK region.

Results: All cases diagnosed within Yorkshire were matched with cases registered at ONS. The final analysis dataset consisted of the intersection of these two registers. Survival estimates were obtained using the Kaplan-Meier method.

Possible explanations for these differences and a fuller description of the data will be presented.
MANAGEMENT OF LYMPHOMA PATIENTS: A POPULATION-BASED SURVEY IN URBAN AREAS OF GERMANY
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Introduction: This prospective observational study aims to survey the medical care and treatment results of lymphoma patients and to compare those participating in a clinical trial with the others.

Method: A survey of all lymphoma patients in a population is thus necessary. Cases are detected as soon as possible after diagnosis via pathologists, clinicians, practitioners, hospital administrative lists and reported by the patients themselves. Eligibility criteria include diagnosis, date of diagnosis, age, and informed patient consent. Patient characteristics, type of institution, diagnostic measures, type of treatment and treatment results are to be investigated. Data is collected by means of a patient notebook completed both by patients and by treating physicians.

Results: The patient notebook project has been tested in a one-year pilot phase in two regions, Cologne city and the Saarland federal state, totalling 2 million inhabitants. 192 eligible patients participated, an estimated relative recruitment rate of 35% of incident cases, comprising 22 Hodgkin lymphomas, 111 non-Hodgkin lymphomas, 36 chronic lymphatic leukemias and 18 multiple myelomas/plasmacytomas. Relative recruitment of these diagnostic categories varied markedly between the two survey regions. Patients were treated in university clinics (35%), other hospitals (32%), haematological oncology practices (32%) and other practices (1%), with considerable differences between regions. 34% of patients were known to participate in a clinical trial and 46% were definitively not in a trial (unclear for 21%). Where first-line treatment was documented (76% of patients), the given regimen was: for EL patients ABVD (n=7) or 4 BEACOPP (n=13); for NHL patients a CHOP variant (n=4), a watch-and-wait strategy (n=13) or miscellaneous regimens (n=16); for most CLL patients 28/32 a watch-and-wait strategy.

Conclusion: Pilot phase experiences demonstrate feasibility and encouraging recruitment rates. Recruitment will continue for two more years initially, and (as a previous comparable survey (PACE) suggests) rates can be expected to increase as the project becomes established. The analysis of recruitment patterns permits us to focus in future on weak areas, thus minimizing bias. Management quality will be assessed and compared between patients within and outside clinical trials.

EPIGENETIC CHARACTERISTICS OF NON-HODGKIN'S LYMPHOMA IN BURGUNDY (FRANCE): A POPULATION-BASED STUDY FROM 1980 TO 1997
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Introduction: Non-Hodgkin’s Lymphomas (NHL) is at the moment the most frequent hematological malignancy (HM). It was not the case in 1980. In order to understand this increase, it is necessary to improve our knowledge on epidemiological characteristics of new cases of lymphomas. A population-based registry offers this possibility. The population-based registry of Besançon is located in Burgundy, France. According to the 1990 census, the population was 493,931 of which 65% lived in an urban area (2,000 inhabitants). The department is divided in 40 administrative areas (cantons). A population-based registry specialized in HM was created in 1980 in Cité d’Or.

Results: For the period 1980-1997, the World Standardized Incidence Rate was relatively 7.7 for Men (440 cases) and 5.1 for Women (393 cases, sex ratio 1.51). Five-year-age-adjusted incidence rates were low under 40 years and increased for both sexes until 80 years. Mean age was 60.7 years in men and 65.7 in women (p<0.01). The time of diagnosis, 35% of the cases were nodular only, 57% with extra-nodal location (n nodes) and for 8%, this information was missing. Among other locations, 23% were bone marrow, 21% skin, 20% ENT, 19% digestive tract and 17% various and less frequent locations.

Urban rates were significantly higher than rural rates both in men and women (respectively 9.2 vs 5.4, p<0.005 and 3.9 vs 3.7, p<0.02). Moreover, at the external level, there is a significant extra-Poitevin over-dispersion (OD) for men (OD=1.48, p<0.03) but not for women (OD=1.11, p<0.3). This is probably due to an excess of cases in the main town of Dijon.

Between 1980 and 1997, the incidence rate increased from 4.0 to 10.2. The mean annual rate increase was higher in women (4.7%, p<0.005) than in men (3.4%, p<0.01). This increase was observed in patients aged under 20 years. Relative survival rates were 61% after five years and 50% after 10 years.

Conclusion: This study showed geographical and gender disparities in epidemiology of NHL. This suggests a possible implication of environmental factors, occupational or not and needs further investigation.

PREVALENCE OF TRANSFUSION-TRANSMITTED VIRUS (TTV) DNA IN PATIENTS AFFECTED BY LYMPHOPROLIFERATIVE DISORDERS
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Transfusion transmitted virus (TTV) is a single stranded, circular DNA virus with a number of characteristics typical of animal circoviruses. It was isolated in 1997 from the serum of a patient with posttransfusion hepatitis. However, TTV role in the pathogenesis of cryogenic hepatitis seems negligible. Its role in causing diseases has not been completely ruled out.

We have investigated the prevalence of TTV infection in 76 unselected patients suffering from lymphomas (Hodgkin disease - HD- or non-Hodgkin lymphomas -NHL-) and of 30 healthy controls. Patients median age was 45 years (range, 14-80), all of them were studied at the presentation and none had been previously transfused. The presence of TTV-DNA in serum samples has been tested by hemi-nested polymerase chain reaction (PCR).

We found the prevalence of TTV DNA in the serum of 12 out of 45 (26.7%) patients with NHL and in the serum of 10 out 31 (32%) of patients with HD. We found the presence of viral DNA only in 13% (4/30) controls. The size of this sample is too small for a statistical analysis. Nevertheless, it is intriguing the apparent increased prevalence of TTV infection in patients suffering from lymphomas that is in keeping with the increased prevalence in lymphoproliferative disorders of other hepatitis virus such as HGV or HGV.
THE ROLE OF HEPATITIS C VIRUS (HCV) INFECTION ON B-CELL NON-HODGKIN LYMPHOMA (B-NHL) IN DIFFERENT GEOGRAPHICAL AREAS.

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In order to study the role of HCV infection on hematological type, chemotherapy related hepatic toxicity and survival among B-NHL we evaluated consecutive, previously untreated patients affected by B-NHL, diagnosed according to ACO (American Society of Hematology) classification in Piacenza (345 patients, Northern Italy) and in Reggio Calabria (111 patients, Southern Italy). Antibodies against HCV were detected in 143 among 456 patients (31%) by RIBA. Both in the North and in the South this prevalence was significantly higher than in matched control population (P<0.001). Nevertheless, we observed a higher percentage of HCV+ patients in the North (32% versus 24%) in the South, although no differences were detected in the control populations. Hysterectomy subtypes were slightly differently distributed between HCV positive patients and negative ones (P<0.07). Immunocytochemistry was more represented in HCV positive patients (adjunct residual +2.5), while MALT lymphoma was less (adjunct residual -1.4) as well as anaplastic B cell lymphoma (adjunct residual -1.9). However immunocytochemistry was highly prevalent in the North but not in the South. HCV+ patients were older (65±12.9 vs. 61.6±14.2 years, P<0.001) and more frequently women (86 of 135, P<0.001). We did not find increase chemotherapy related hepatic toxicity in HCV+ patients except among meothrextate containing regimens. Therefore in our study lymphoma HCV+ patients were safely managed with CEP regimen.

Moreover, among 7 patients who experienced hepatic toxicity by meothrextate, six were able to ultminate CEP administration. Both in the North and in the South overall survival and event free survival (Kaplan Meier, log rank test and Cox regression) were not significantly affected by HCV infection. Basically, we were able to confirm an increase prevalence of HCV infection in B-NHL, in different geographical areas. However we also registered some differences from one area to another one. So HCV may be seen as an important cofactor in lymphomagenesis but it has to be associated with other cofactors and some of them can geographically change.

LACK OF ASSOCIATION BETWEEN HEPATITIS C VIRUS INFECTION AND HIV-RELATED LYMPHOMAS.

IARC, INSERM U271, HÔPITALS BELLEVUE, CROIX ROUSSE, HERRIOT, HÔTEL-DIEU, LYON AND ST ETIENNE, FRANCE.

Introduction: The oncogenic role of Hepatitis C Virus (HCV) has been suspected in several B-cell Non-Hodgkin’s Lymphomas (NHL). As seroprevalence of HCV is usually greater in HIV-infected individuals, we planned to evaluate the relationship between HCV and NHL in patients with HIV infection.

Population and methods: A population-based case-control study was performed among the cohort of HIV patients followed in Lyon and Saint Etienne (DMI 2—France) from 1/1990 to 12/31/2001. The serologic status was assessed by ELISA test at entry in the cohort. The Odds-Ratio (OR) and its 95% Confidence Interval (CI) were obtained using a logistic regression model.

Results: Of 2869 patients, 104 (3.6%) developed a NHL. The HCV positivity rates were 18 for NHL (7.3%) and 436 for controls (17.4%). The OR for HCV among NHL patients and controls was 1.22 (CI = [0.72—2.07]), and 0.93 (CI = [0.42—2.05]) after adjustment for age at the entry in the cohort, sex, type of contamination and CD4 count at the entry in the cohort.

Conclusion: The current study demonstrates no relation between HCV infection and NHL in patients infected by HIV. This may be due either to the latency between HCV infection and NHL being too short, or because the role of HCV in lymphomagenesis is restricted to low-grade NHL, a situation rarely seen in the setting of HIV infection.

This project was made possible thanks to an AIRS grant.

USE OF FINE NEEDLE ASPIRATION BIOPSY AND FLOW CYTOMETRY IN DIAGNOSIS OF NON-HODGKIN’S LYMPHOMA. A REVIEW OF 140 CASES. Rynksiewicz G.
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Introduction: Estimating the phenotype of lymphomas is most commonly based on immuno-histochemical reactions (IH) on paraffin sections, less frequently on flow cytometry (FCM) of cell suspensions. When the slides with IH are inadequate for precise diagnosis or in urgent cases of fast progressive disease, fine needle aspiration biopsy (FNAB) and FCM are used in order either to exclude malignancy in cases of reactive lymphoid hyperplasias, or to specify the phenotype and the diagnosis.

Methods: The purpose of the study was to report the results of FNAB/FCM studies from 140 pts. (64 females, 76 males at the age of 14 to 85). In order to check the value of this approach, its results were compared with those obtained from biopsies/histopathologic (IH) and IH studies. Aspiration biopsies were taken either directly (111 cases) or guided by visualizing procedures (29 cases) from peripheral or deeply situated lymph nodes and tumors. Antibodies against the following antigens were used: CD45, CD45RA, CD45RO, HLA-DR, against pan - B - antigen: CD19, CD20, CD22, CD37 CHD7 and against pan - T-antigens: CD3, CD4, CD8, CD20, TCR alpha/beta, TCR gamma/delta, against NK cells: CD16, CD56, CD57, against CD25, CD11c, CD20, CD22, TGF, CD10, CD62L. Furthermore, antibodies against light chains: kappa, lambda and isotopy control were used.

Results: Adequate samples for FNAB/FCM studies were obtained in 134 out of 140 cases (96%) (in 109 out of 111 direct and 25 out of 29 ultrasonography or CT-scan guided punctures, respectively 95% and 80%). Lymphomas was found in 111 cases (83%), reactive lymph node lesions in 14 (10%), in 7 cases other malignancies. In 15 cases (11%) FNAB/FCM constituted the primary diagnosis. In another 30 cases (21%) FNAB/FCM approach was used in search for recurrent or residual disease after treatment. In three cases FNAB/FCM diagnosis was false negative. In 76 of 134 cases (57%) FNAB/FCM examination confirmed the IH diagnosis. In 41 out of all cases (31%) it specified prior incorrect or incomplete lymphoma diagnosis.

Conclusion: The combination of FNAB and FCM appears to be an excellent method enabling possible estimation of the full phenotype of lymphoma cells which leads to a proper diagnosis and even can limit the number of necessary EIP and IH examinations.

PROGNOSTIC ASSESSMENT OF INITIAL LYMPH NODE ASPIRATION BIOPSY AND INTERNATIONAL PROGNOSTIC SCORE IN NON-HODGKIN LYMPHOMA. B. Miljakovic, R. Nedelev–Kamchi, V. Cerimovic-Martonovic and M. Petrovic.
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Introduction: Fine needle aspiration biopsy (FNAB) is an effective, simple and well confirmed diagnostic procedure in the first step of NHL diagnosis. It is important to find out the initial prognostic profile of the patient with NHL (IPI) in order to create the most effective treatment. The purpose of our study is to confirm the prognostic value of the FNAB analyses in correlation with the clinical parameters.

Methods: 172 FNAB samples of peripheral lymph nodes were obtained from pts with lymphoedema by three years period. In 81 pts (47.1%) the diagnosis of NHL was established. The morphological analyses were done according to Working formulation criteria (WF) and completed with immunocytochemical and stemoid-proliferation method. Proliferation rate was determined by Ki-67. In all NHL pts IPI score was established.

Results: The male/female ratio was 65/44 and 46.9% were <60 years old and 53.1% >60 years old. Morphological FNAB analyses showed: small lymphocytes in 19.8%, lymphoplasmacytoid cells in 25.3%, centrocytes in 25.9%, mixed in 22.2%, large cell (immunoblasts and centroblasts) in 25.9%, Burkitt in 2.5% and lymphoblasts in 1.2%. According to immunophenotype, we classified them (REAL): indolent 45.7%, moderate aggressive 22.2% and aggressive in 32.1%. Low and low intermediate IPI was the same: 39.5%, and high intermediate in 21% of pts. Statistical analyses showed statistical significant correlation between cytomorphology, immunophenotype, Ki-67 score and IPI on survival curve and overall survival.

Conclusions: FNAB cytomorphology, with additional immunophenotype and proliferative rate of lymphoma cells, together with IPI can serve as a first pretreatment prognostic step for the adequate therapeutic approach in pts with de novo NHL.
DO ASPIRATE (CLOT) SECTIONS HAVE A ROLE IN THE DETECTION OF LYMPHOMATOUS INFILTRATION IN BONE MARROW?
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It has been the standard practise at this hospital to examine aspirate (clot) sections (fixed in 70% alcohol and was embedded) in addition to trephine sections in all patients undergoing staging for lymphoma. There are instances when lymphomatous tissue has been detected in the aspirate sections, but not in the trephine section, despite an adequate trephine sample. This study attempted to determine how often this occurs and so assess the value of aspirate sections in the staging of lymphoma.

Method: Patients with lymphoma were identified from departmental records and their initial staging marrow report was reviewed. Marrows reported as containing lymphomatous or reactive tissue, were reviewed independently of patient details and the initial report. 20% of biopsies reported as not involved were also examined. Each trephine and aspirate section were assessed for adequacy and for the presence of reactive or lymphomatous tissue. A total of 51 biopsies were examined. Tissues were assessed as adequate if longer than 10mm and aspirate sections as adequate if more than 5mm of tissue was available for examination. In addition to this the quality of the specimen was assessed.

Results:

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*Only 1 trephine sample had reactive tissue.

Conclusion: The common practice of examining trephine sections only would have missed 10 of 31(32%) positive marrows overall. Even when the trephine material was deemed adequate for evaluation, only the aspirate sections were involved in 6 of 27(22%) marrows. However reactive lymphoid tissue is found more frequently in aspirate material. These results suggest that examination of aspirate sections should be considered in staging of all patients with lymphoma.

EVALUATION OF IRON METABOLISM DISORDERS IN PATIENTS WITH LYMPHOMA
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Introduction: Many tests have been used in the differential diagnosis of iron metabolism disorders. Ferritin, free erythrocyte protoporphyrin (FEP), serum iron, total iron binding capacity (TIBC) and percent transferrin saturation are iron indices used for the direct evaluation of iron status. Red cell morphology, red cell distribution width (RDW) also plays important roles. Also, measurement of the serum transferrin receptor (sTfR) has been popularized.

Methods: Serum ferritin concentration reflects the iron stores in body tissues, whereas red cell distribution width (RDW) is also a useful indicator of iron status. Ferritin is a substance and thus is a good indicator of iron storage status. Ferritin is the main component of iron bound to a protein called apoferritin. Ferritin is then the main component of iron bound to a protein called apoferritin. Ferritin is the main component of iron bound to a protein called apoferritin. Ferritin is the main component of iron bound to a protein called apoferritin.

Results: We found EF levels 18.2 ± 15 μg/l; sTfR 2.4 ± 1.6 μg/l in lymphoma group. Sensitivity, specificity and correlation tests were evaluated according to the bone marrow iron staining status. There was a good correlation between EF and bone marrow iron staining status. There was a good correlation between EF and bone marrow iron staining status. There was a good correlation between EF and bone marrow iron staining status.

Conclusion: Our results suggest that EF levels are more useful than sTfR, SF, serum iron, serum iron binding capacity and transferrin saturation for evaluation of iron stores in patients with lymphoma.

A NEW METHOD FOR EARLY AND DIFFERENTIAL DIAGNOSIS OF MALIGNANT LYMPHOMA
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The present research is focused on the determination of the molecular and structural transformations in membrane cytoplasmic lipids present in blood lymphocytes of patients with malignant lymphoma. Ninety patients (52 women and 38 men) ranging from 25 to 80 years old were investigated. Patients were separated into four groups based on clinical research and laboratory analysis. The groups were: 1) initial stage without treatment; 2) progressive stage with specific therapy; 3) remission stage and 4) relapse stage. Lymphocytes from a normal population were used as controls for H1-NMR spectroscopy with high resolution was used in this research. Two parameters were selected for the characterization of lipid molecular changes: chemical shifts of 0.89 which are related to the fatty acid protons in methyl lipid groups and chemical shifts of 3.21 related to the methyl groups protons of polar phosphatidylincholine heads. We discovered that the lymphocyte spectrometers from the initial stage did not change throughout the other stages of disease listed above. The experimental data when presented graphically reveal two distinct, non-intersecting areas: one area represents donors (normal population) and the other area represents patients with malignant lymphoma. This variance may be used for early and differential diagnostics of malignant lymphoma.
HODGKIN LYMPHOMA-ASSOCIATED HEMOPHAGOCYTIC SYNDROME: CLINICO-PATHOLOGICAL CHARACTERISTICS OF TEN PATIENTS

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Introduction: Hodgkin lymphoma (HL) associated with hemophagocytic syndrome (HPS) is extremely rare. An extensive search of the literature revealed only 23 cases since 1979, most of them published as case-reports. The purpose of our study was to determine the clinicopathological characteristics of a series of ten patients.

Methods: Based on three consecutive cases in our institution, we contacted all hematologists working on HL in France and found seven additional cases.

Results: We reported ten patients, eight men and two women, median age 41.6 years (range 21 – 78 years). One patient had HIV infection with a viral load < 50 copies/ml. All patients had fever and weight loss. Splenomegaly, hepatomegaly and lymphadenopathy were disclosed in 7, 4 and 7 cases, respectively. Six patients had neurological signs that dominated the clinical presentation. Biopsy findings occurred in 90%. Increased serum levels of ferritin (mean: 1364.5 ng/ml) and C-reactive protein (mean: 194.2 mg/l) were found in 100%. Serum levels of triglycerides (mean: 3.4 mmol/l), lactate dehydrogenase (mean: 1038.8 IU/l) and liver tests were abnormal in 90%. Hemophagocytic features were noted in bone marrow and/or liver biopsies in all patients. HPS and HL were diagnosed simultaneously in 6 cases. In the 4 others, HPS preceded HL diagnosis for 2 to 5 months. The diagnosis of HL was based on bone marrow, lymph-node and liver biopsies in 8, 6 and 2 cases, respectively. The clinical stage was always IVB. The detection of LMP-1 and EBERs in tumor cells established the association with Epstein-Barr virus in all patients tested, with the exception of the first case. The treatment consisted with chemotherapy (10) and additional radiotherapy (1). Five of the patients died from multiple organ failure related to uncontrolled HPS. One week to 3 years after the diagnosis of HL-associated HPS. The remaining five patients survived in complete (4) or major partial (1) remission, with a median follow-up of 12.6 months (6-24 months).

Conclusions: This series reveals that HL-associated HPS share very different characteristics than classical HL. We feel that HL-associated HPS require a rapid diagnosis and early intensive therapy.