or from the transformation of indolent lymphomas. The technique of gene signature from the DNA arrangement in the matrix identifies two distinct forms of DLBCL – one that expresses genes characteristic of the germinal center (GC) cells and another, which expresses genes which are normally induced during in vitro and in vivo activation of B-Cells. Many of these genes codify proteins which play a role in the transcription factors and thus control the tumor transformation and response to the chemotherapy program. The immunohistochemical expression of these proteins is variable within the subgroups identified by the gene signature. Tissue microarrays (TM) appear to be particularly useful for immunohistochemical characterization of lymphomas and. facilitate comprehensive molecular characterization of a large number of tumours at a time.
Objective: To determine the GC and non-germinal center (NGC) subgroups in accordance with the immunohistochemical expression of CD10, BCL-6 and MUM1 and to evaluate the overall survival (OS).
Cases and Methods: Seventy four untreated pts (median age: 59 yrs: 39M/35F) with DLBCL de novo lymphoma, 51.2% male/48.8% female, median age of 59 years, median follow-up time of 16 months and average of 27.5 months, with 63% presenting nodal disease. In order to facilitate the immunohistochemical study, tissue microarrays were utilized. Antibodies used for immunohistochemistry stains: CD10 (clone 56C6; Novocastra; NCL-CD10–270), BCL-6 (clone GI 191E/A8; Cell Mark; CMC 798) and MUM1 (clone MUM1p; Dako, CA; M7259)
Results: The cases were comprised of 36% DLBCL-CG and 64% DLCBL-NGC, the group GCB was associated with a significantly longer OS ($p = 0.003$).
Conclusions: TM method is useful for immunophenotyping and clinic pathological analyses and it makes diagnosis less labor-intensive at lower cost. The algorithm based on the expression of CD10, BCL-6 and MUM1 identified subgroups with different prognoses.

6024 POSTER

Treatment outcome in patients with advanced-stage Hodgkin's lymphoma after developing drug intolerance to components of ABVD or BEACOPP regimens

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Purpose: Doxorubicin-associated cardiac symptoms and bleomycin-induced pulmonary toxicity as well as hypersensitivity reaction to etoposide. are important side-effects of ABVD or BEACOPP chemotherapy regimens used in patients with advanced Hodgkin's lymphoma (HL). Omission of a particular drug from subsequent chemotherapy or proceeding with another regimen are most common approaches to complete HL therapy. The aim of the study was to estimate the impact of different drugs discontinuation on the outcome in this cohort of HL patients. Patients and Methods: Between 1998 and 2004, 120 pts with advanced HL were enrolled for receiving 6−8 courses of ABVD- or BEACOPP-based chemotherapy followed by radiotherapy on bulky or residual sites. BEACOPP (baseline) was prescribed only to the patients with any of 3 adverse characteristics: (1) lymphoid depletion histology, (2) pericardial effusion, (3) involvement of bones or bone marrow combined with massive splenic lesions. Overall (OS) and relapse-free survival (RFS) in groups of patients, who had doxorubicin, or bleomycin, or etoposide omitted from their regimen, were compared with those ones after full course therapy.
Results: In ABVD group (n = 65), doxorubicin or bleomycin discontinuation was necessary, respectively, in 6.2% and 8% patients. In BEACOPP group (n = 55), etoposide or bleomycin were withdrawn in 5.4% and 9% cases, respectively. The median follow-up was 4 years. The omission of bleomycin had no impact on OS and RFS in the relevant treatment groups. Discontinuation of doxorubicin resulted in 3-year RFS of $50\pm25\%$, compared to $89\pm4.7\%$ in the main AVBD group ($P = 0.109$); OS was, respectively, 100% and $95\pm3\%$. All three patients who had been treated without etoposide, developed relapses and died of HL after 9, 21 and 42 months; OS and RFS in the main BEACOPP group was, respectively, $92\pm4\%$ and $86\pm5\%$ ($P = 0.000$, log-rank test).
Conclusions: Despite the relatively rare occurrence of etoposide intolerance, our data on this small cohort show important role of this drug for favorable OS and RFS after BEACOPP-based treatment. The use of doxorubicin seems to be important for acceptable RFS after ABVD. The crucial point may be an early discontinuation of etoposide and doxorubicin. On the contrary, bleomycin pulmonary toxicity is dependent on cumulative dose and, as a rule, it is registered after 4 to 6 courses when bleomycin may be safely omitted.

6025 POSTER

Toxicity and Response rates to Imatinib in chronic myeloid leukemia with variant translocation – An experience from south India

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Background: The scenario of Chronic myeloid leukemia is changed considerable with the introduction of the novel Bcr-Abl tyrosine kinase inhibitor; Imatinib. Currently we can achieve nearly 100% complete hematological remission, upto 85% cytogenetic remission and 45% of molecular remission with Imatinib in classical t(9:22) translocations. We wanted to evaluate weather we can achieve the same results in variant translocations.
Methods: It is a non randomized, prospective study conducted at a tertiary care cancer center with an approximate attendance of 15,000 new cases. The patients were stratified into those with classical translocation and those with variant translocation. Hematological assessment was done every monthly, Cytogenetics (conventional) every 3 monthly and molecular assessment (PCR for Bcr-Abl) every 6 monthly. CTC version 3.0 was used to assess the toxicity. Differences in the proportions were calculated with the help of Medcalc Version 7.5.
Results: A total of 314 patients with CML were evaluated who were on regular treatment with Imatinib. Out of them 24 patients had varint translocation. The response rates in two groups are listed in the table.
Conclusion: Our findings suggest that CML patients with variant translocations had slow and poorer response to Imatinib, compared to those having classical translocation. The toxicity rates are comparable in both groups.

Response rates and toxicity to imatinib

	Classical (n = 289)	Variant (n = 25)
Mean age	42.6±12.2	41.6±14.9
Percentage of patients in		
chronic phase	86%	80%
accelerated phase	12%	16%
blast crisis	2%	4%
Hematological response		
complete	96%	80%
no response	4%	20%
Cytogenetic response(n = 184)	62%	48%
Molecular response[a] (n = 99)	42%	32%
Grade II/IV toxicity	25%	32%

[a]Reduction of BCR-ABL.

6026 POSTER

Primary follicular lymphoma of the gastrointestinal tract; initial sites and the promise of the rituximab plus CHOP chemotherapy

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Background and Aims: Little is known about the frequency, clinicopathologic characteristics, prognosis, and treatment of primary follicular lymphoma of the gastrointestinal tract (PFLGI). We examined the clinicopathologic characteristics of PFLGI and the potential benefit of the treatment with rituximab plus CHOP chemotherapy (R-CHOP).
Methods: Fourteen patients with PFLGI (10 men and 4 women; mean age, 57.9 years) who visited Hiroshima University Hospital between January 2001 and December 2006 were enrolled in this study. We performed double-balloon enteroscopy (DBE) in 12 PFLGI patients to examine the entire small bowel. Five patients were treated with R-CHOP and evaluated for response after completing treatment.
Results: The frequency of PFLGI was especially high in recent years. PFLGI accounted for 19.6% of primary GI non-Hodgkin's lymphoma from 2005 to 2006, whereas it accounted for only 4.1% from 2001 to 2004. DBE showed new lesions in the third portion of duodenum, jejunum, or ileum in 10 of these 12 patients (83.3%). The endoscopic finding was nodularity of

the involved mucosal surface (small whitish polyps or whitish granules). A complete response was obtained in all patients that received R-CHOP, and no recurrence was seen.
Conclusions: Examination of the entire small bowel of PFLGI patients is necessary and DBE is useful for evaluation of patients with PFLGI. R-CHOP may produce a complete response, but it is necessary to monitor patients for as long as possible because of the risk of relapse.

6027 POSTER

Are there variations in the cause of deaths over different time periods in Hodgkin's disease?

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Introduction: Hodgkin's disease is curable in a high percentage of patients, although exists an increase mortality in patients who suffered this disease with regard to general population. This variation could be caused by previous treatment.
Our study try to demonstrate if the new technology and the change in the treatments over the time had changed the mortality patterns.e studied the various causes of death.
Patients and Methods: We included all patients diagnosed with HD, histologically confirmed, at the University Hospital "Clínica Puerta de Hierro" between 1967 and 2003. The patients were dividen into three cohorts: Cohort A patients treated before 1980, Cohort B patients treated between 1981–1986 and Cohort C, patients treated after 1986. Vital situation and competing risks of causes of deaths were examined in three time periods.
Results: We included 534 patients, the survival estimates at 5, 15 and 20 years were 81%, 72% and 65% respectively. The median follow-up was 9.1 years and at the close of the study 63.1% were alive and 31.8% had died. In the whole cohort the most common cause of death was the progress of Hodgkin's disease, followed by death due to a second tumor. At the analysis by periods, there were statistically significant differences between cohort A and the other two. Combined treatments, advanced stages and LD and MC histology were less frecuent after 1980. Survival was worse in cohort A with statistically significant difference ($P < 0.001$). However the main cause of death was tumor progression independently of the time period analyzed.
Conclusions: The main cause of death was Hodgkin's disease progression. A clear reduction in death related to the toxicity of treatments was seen over time. Patients die now for reasons that are different from in the 1970s and this is important when planning preventive and clinical research activity. So, the question is posed as to whether the survival and causes of death series for these patients are telling us about a real situation.

6028 POSTER

Late-onset neutropenia is infrequent and self-limiting in patients with diffuse large B-cell lymphoma in complete remission following therapy with rituximab in combination with chemotherapy

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Background: Recently, studies suggested that late-onset neutropenia (LON) is common in patients receiving rituximab-containing chemotherapy and is associated with high rates of infection. However, these studies were heterogeneous and included patients with different histologies, chemotherapy regimens and treatment intent, making it difficult to draw any firm conclusions. We aim to (1) study the incidence of LON in a uniform group of patients with diffuse large B cell lymphoma (DLBCL), in complete remission (CR) following curative 1st line therapy (2) to evaluate its clinical relevance with respect to life threatening sepsis and (3) ascertain any predictive factors for its occurrence.
Materials and Methods: We reviewed all patients with DLBCL treated in National Cancer Centre Singapore from March 2003 to August 2006, in CR following CHOP-like chemotherapy with or without Rituximab, and identified cases with LON as defined by the neutrophil count of $<1.5 \times 10^9$/L, without an apparent cause, after the recovery of neutrophil count following completion of the intended chemotherapy.
Results: Amongst these 115 patients identified, 85 (74%) received Rituximab in-combination with CHOP-like chemotherapy. The median number of cycles of Rituximab was 6. At a median follow-up of 24.6 months (range, 5.0 to 46.6 mths), 15 (18%) in the Rituximab group developed LON as compared to none in those not receiving Rituximab. The median time to neutrophil nadir (grade 3 and 4 in 8 and 3 patients, respectively) was 3.3 months (range, 1.3 to 8.6 months). Development of LON was associated with one episode of non-life threatening bacterial culture-positive urinary tract infection and pulmonary tuberculosis in the same patient; no other serious infectious episodes were documented. Filgrastim was administered in one patient. Neutrophil recovery occurred in all but 2 patients, at a median of 5.8 months (range, 1.4 to 11.4+). Univariate analysis including age, stage, lactate dehydrogenase, initial bone marrow involvement and number of Rituximab cycles, were not predictive for LON.
Conclusions: Our study shows that grade 3−4 LON is an infrequent occurrence (13%) in DLBCL patients receiving chemo-immunotherapy. Our data suggests that it is self-limiting and not associated with life-threatening infections. These results are important and reassuring, as DLBCL is the most common lymphoid neoplasm in clinical practice and Rituximab is invariably used.

6029 POSTER

High-dose sequential chemotherapy followed by autologous stem cell transplantation in relapsed and refractory lymphomas. Sixteen years experience of a single center

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Background: Traditionally high-dose (HD) chemotherapy of refractory lymphomas (Hodgkin and non-Hodgkin) consists of a single cycle of chemotherapy. In 1990 Gianni, et al. proposed sequential infusion with high doses of effective regimens as a conditioning and simultaneously therapeutic part of a megatherapy program which showed high response rates in refractory Hodgkin lymphomas. The aim of this study was to investigate the applicability of the sequential high dose therapy program in patients with refractory lymphomas as well as to estimate the therapeutic profit compared to single cycle megatherapy and transplantation.
Materials and Methods: Fifty patients (median age 38 years, range 16−60) (23 females, 27 males) who suffered from Hodgkin (20) and non-Hodgkin lymphomas (30) were enrolled. All patients had received conventional chemotherapy +/− radiotherapy and presented primary refractory disease or relapse within the first 12 months since the first treatment. Peripheral blood stem cells (PBSC's) were mobilized with HD-CTX 6 g/m^2 and growth factor successfully in all patients. Upon hematologic recovery they received sequentially HD-VP16 1400 mg/m^2, HD-MTX 8 g/m^2, HD-VCR 1.4 mg/m^2 and HD-Cisplatin 120 mg/m^2. Finally they received high dose chemotherapy with BEAM (BCNU 300 mg/m^2 D1, Etoposide 200 mg/m^2 D2−5, Aracytine 200 mg/m^2 D2−5 and Melphalan 140 mg/m^2 D6). After 72 hours from the end of chemotherapy PBSC's were reinfused.
Results: Overall response rate was 86% [28 (56%) complete remission (CR) and 15 (30%) partial remission (PR)] while seven patients (14%) presented deterioration (PD). Specifically, from patients with Hodgkin disease 11 (55%) presented CR, 5 (25%) PR and 4 (20%) PD, while from patients with non-Hodgkin lymphoma 17 (56.67%) presented CR, 10 (33.33%) PR and 3 (10%) PD. Toxicity was manageable. The mean overall survival (OS) was 105.95 months (SE = 13.61) and the mean time to progression (TTP) was 97.7 months (SE = 13.7).
Conclusion: Sequential high dose chemotherapy followed by autologous stem cell transplantation is effective in patients with lymphomas refractory to conventional therapies and probably is better than classical programs with single cycle megatherapy and transplantation.

6030 POSTER

Different decrease pattern of FDG uptake after 1 cycle chemotherapy in NK T-cell lymphoma: comparison with diffuse large B cell lymphoma

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Background: Early metabolic evaluation after 1 cycle of chemotherapy (chemo1) is accepted as a effective tool to predict outcome in patients with diffuse large B cell lymphoma(DLBL). But little is known about early