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Oral Presentation

Impact of MYC, BCL2 and Coexpression of MYC and BCL2 Protein on outcome in Patients with Diffuse Large B-cell Lymphoma (DLBCL) Treated with Cyclophosphamide, Doxorubicin, Vincristine and Prednisolone (CHOP) or Rituximab, Cyclophosphamide, Doxorubicin, Vincristine and Prednisolone (R-CHOP)

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Background: Diffuse large B-cell lymphoma (DLBCL) is a clinically and biologically heterogeneous disease. A general improvement in survival rate has been achieved since rituximab (R) added to CHOP. Still, approximately 40% of patients suffer from relapse within a short period of time and eventually die of the disease. Recently double hit lymphoma (DHL), defined as translocations of both MYC and BCL2 or coexpression of MYC and BCL2 protein, are characterized by poor outcome.

Objectives: We compare the treatment outcome between DHL patients treated with R-CHOP and CHOP, the association of the International Prognostic Index (IPI) parameters according to each subgroup of patients determined by immunohistochemical study (IHCs).

Materials and Methods: Paraffin-embedded lymphoma samples from 83 patients with DLBCL (35 patients treated with R-CHOP and 48 patients treated with CHOP) were studied using IHCs for BCL2 and MYC. The demographic data and other prognostic factors were also collected.

Results: Of the 35 patients treated with R-CHOP, 4 (11.4%), 4 (11.4%), 23 (65.8%) and 4 (11.4%) were BCL2+, MYC+, BCL2 – MYC – and BCL2+ MYC+ (DHL), respectively. Of the 48 patients treated with CHOP, 5 (10%), 6 (13%), 37 (77%) and none were BCL2+, MYC+, BCL2 –MYC – and BCL2+ MYC+ (DHL), respectively. The patients with BCL2 +, MYC +, BCL2 – MYC – and BCL2 + MYC + (DHL) DLBCL were associated with age > 60 years old (22.2%, 50.0%, 41.7% and 75.0%, respectively), high LDH (33.3%, 40.0%, 45.0% and 100.0%, respectively), ECOG 2-4 (0%, 10.0%, 11.7% and 75.0% respectively), extranodal site > 1 (0%, 20.0%, 10.0% and 25.0% respectively), stage III/IV (22.2%, 50.0%, 50.0% and 100.0% respectively) and high/high intermediate IPI (11.1%, 40.0%, 35.0% and 100.0% respectively). Of the 35 patients treated with R-CHOP, ones with DHL have significantly inferior mean progression-free survival (PFS) and mean overall survival (OS) as compared with those without DHL (0.7 years vs. 3.9 years; p = 0.001 and 1.1 years vs. 4.2 years; p = 0.004, respectively). Of the 48 patients treated

with CHOP, mean PFS and mean OS of the patients with BCL2 +, MYC + and BCL2 – MYC – were 4.7 years, 3.8 years, 5.1 years and 4.7 years, 3.8 years and 5.9 years, respectively. The patients treated with R-CHOP have significantly better median PFS and 5-year PFS than those treated with CHOP (3.9 years vs. 2.4 years; p = 0.019 and 46.5% vs. 37.5%; p = 0.019, respectively). However, both median OS and 5-year OS of the patients treated with R-CHOP were not significantly better than those treated with CHOP (3.8 years vs. 3.3 years; p = 0.757 and 52.5% vs. 51.0%; p = 0.757, respectively).

Conclusions: The DHL is significantly associated with inferior treatment outcome and poor IPI.

Keywords : ● *Diffuse Large B-cell Lymphoma* ● *Double Hit Lymphoma* ● *BCL2 and MYC*

Changing of Platelet Derived Microparticles, SCUBE-1 and IL-1β in Children with Dengue Infection

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Background: Dengue infection is one of the most important acquired platelet disorder in tropical countries. Platelet activation can lead to platelet dysfunction in various medical conditions such as cancers and thrombosis. The role of platelet activation in the pathogenesis of platelet disorder in dengue infection is not well studied yet.

Objective: To evaluate the role of platelet activation in dengue infection using novel molecular markers such as platelet derived microparticles (PDMP), signal peptide-CUB-EGF domain-containing protein 1 (SCUBE-1) and interleukin 1 beta (IL-1β) and to correlated these markers with severity of disease.

Study Designs: Prospective cohort study.

Materials and Methods: Twenty children (age 5-15 years) who had serological confirmation of dengue infection from June 1st to November 30th, 2013 were recruited in this study. Eight patients were diagnosed with dengue fever (DF) and twelve patients were diagnosed with dengue hemorrhagic fever (DHF). Mean age was 10.45 ± 3.94 years. Blood samples were collected during three stages of disease: febrile stage, toxic stage and recovery stage. Then PDMP, SCUBE-1 and IL-1β levels were measured from patients plasma by enzyme-linked immunoadsorbent assay. Forty healthy age-matched children were use as the control group.

Results: The plasma levels of SCUBE-1 and IL-1β were significantly higher in all stages of dengue infection compared to control group ($p < 0.001$). PDMP levels were significantly increased compare to control group only in toxic stage of dengue infection ($p = 0.007$). However, levels of PDMP, IL-1β and SCUBE-1 were not significant different between DF and DHF group in any stages.

Conclusions: Platelet activation can be one of the mechanism that leads to platelet disorder in patients with dengue viral infection including thrombocytopenia and platelet dysfunction. However, the novel molecular markers associated with platelet activation can not be used as a biological marker for dengue disease severity.

Keywords : ● *SCUBE-1* ● *IL-1β* ● *Platelet derived microparticles* ● *Dengue*

Prevalence of High D-Dimer Level after Stopping Anticoagulant Therapy in Thai Adult Patients with Previous Venous Thromboembolism (VTE)

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Background: The optimal duration for anticoagulant therapy after the first episode of unprovoked VTE needs to weigh the recurrent risk against the bleeding risk in individual patient. In Caucasians, a high D-dimer level, measured at 1 month after stopping anticoagulant, is found in 37% and associated with a high VTE recurrent rate requiring long-term anticoagulation. However, there has been no data on the D-dimer levels and recurrent rate after stopping anticoagulants in Thailand.

Objectives: To determine the prevalence and associated factors of high D-dimer levels in Thai VTE patients

Study Design: Prospective descriptive study

Materials and Methods: All patients with the first episode of proximal deep vein thrombosis (DVT) and/or pulmonary embolism (PE) receiving anticoagulant therapy for at least 3 months at King Chulalongkorn Memorial Hospital between January 2013 and December 2013 were enrolled. Patients with active cancer were excluded. The D-dimer levels at 4 and 12 weeks after discontinuation of anticoagulant therapy were determined. The data on VTE risk factors, the percentage of time within therapeutic of INR, thrombophilia profile (protein C, protein S, antithrombin levels and lupus anticoagulants), recurrent VTE and hemorrhagic complications were collected.

Results: There were 37 subjects participating in the study. The median age was 49 years, ranging from 21 to 95 years, and 59.5% of them were female. The VTEs were unprovoked in 59.5%. Twenty nine (78.4%) cases were DVT, followed by PE (10.8%) and DVT with PE (5.4%). The durations of anticoagulants were 3 and 6 months in 21.6% and 78.4%, respectively. The median time in therapeutic INR was 61%. Hemorrhagic complications were found in 16.2% (2 major bleedings, and 4 clinically relevant non-major bleedings).

The prevalence of high D-dimer levels ($\geq$ 500 ng/mL) at 4 weeks after stopping anticoagulants was 52.9% (18/34). The discrepancy of D-dimer levels at 1 and 3 months after stopping anticoagulant were found in 12.5%. Among patient characteristics, only contraceptive pill uses at the onset of VTE was significantly associated with normal D-dimer after stopping anticoagulant ($p = 0.01$). The median follow-up after stopping anticoagulants was 13 weeks, ranging from 3 to 61 weeks. The VTE recurrent rates were 12.5% vs. 0% for patients with high vs. normal D-dimer levels, respectively ($p = 0.17$).

Conclusions: The prevalence of a high D-dimer level after stopping anticoagulant therapy in Thai patients was high. Its predictive role remains to be determined using a longer follow-up time.

Keywords : ● *Venous thromboembolism* ● *Anticoagulant* ● *D-dimer* ● *Thailand*

Prevalence and Associated Factors of Low Bone Mass Density in Adults with Non-transfusion Dependent Thalassemia

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Background: Osteoporosis and osteoporotic fracture represents an important cause of morbidity in adult patients with thalassaemia major. However, there are few studies on bone mineral density (BMD) in patients with non transfusion dependent thalassemia (NTDT) which is the majority of thalassemia patients in Thailand.

Objective: To determine the prevalence of abnormal BMD and examine the associated factors with abnormal BMD in Thai adult patients with NTDT.

Materials and Methods: A cross-sectional study was designed. The NTDT patients who age > 18 years, treated at Srinagarind Hospital during May 2013- December 2013 were recruited. BMD was measured using DXA at lumbar spine (L1-L4) and femoral neck. Abnormal BMD in this study was defined according to T-score $\leq$ -1(in men, age $\geq$ 50 yrs and menopause woman) and Z-score $\leq$ -2.0 in premenopausal women and men with age < 50 yrs). Risk factors related with abnormal BMD was recorded from history taking, questionnaire, and chart.

Result: Of 93 adults with NTD thalassemia (age 18-60 years old, median 28, 35 men and 58 women) were recruited. Sixteen women (27.6%) were menopause. Most of patients was Beta thalassemia hemoglobin E (72/93, 77.42%) and 21 patients (22.58%) were hemoglobin H disease, hemoglobin H constant spring, AEBart's disease and AEBart's constant spring. Body mass index; BMI (range 13.67-23.81, mean 19.23 SD = 2.13) low BMI < 19 46/93 (49.5%), ferritin > 800 ng/mL 71/91 (78.9%) received iron chelator 72/93 (77.47%). No history received transfusion 14/93 (15.11%) splenectomy 44/93 (47.31%). The prevalence of abnormal BMD at lumbar spine, femoral neck and any sites were 55.9, 30.1 and 59.1%, respectively. Using logistic regression menopause (Odd ratio 26, 95%CI: 5.663-119.368, *p = 0.000*) was associated with abnormal BMD at both sites, while lower BMI (in both men and women)(< 19 kg/m^2) (Odd ratio = 3.741, 95%CI: 1.572-8.9, *p = 0.003*) was associated only with abnormal BMD at lumbar spine. Age > 25 years (Odd ratio = 6.1887, 95%CI: 1.930-19.834, *p = 0.001)* was associated with abnormal BMD at femoral neck. In this study, the other factors including No history of transfusion, received iron chelator, serum ferritin > 800 ng/mL, splecnectomy were not associated with abnormal BMD.

Conclusions: The prevalence of abnormal BMD was high (~60%) in Thai adult patients with NTDT. Low BMI (< 19 kg/m^2), age > 25 years and menopause were the risk factors of abnormal BMD in our study population.

Keywords : ● *Non-transfusion dependent thallsemia* ● *Abnormal Bone mass density*

Long-Term Survival Outcomes of Epstein-Barr Virus-Associated Lymphoma in Thai Patients

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Background: Epstein-Barr virus (EBV) is an oncogenic virus associated with various types of lymphoma. Several studies suggested the possibility of a prognostic relationship of EBV in some lymphoma. This study was aimed to assess long-term survival outcomes of EBV-associated lymphoma in Thai patients.

Materials and Methods: A prospective study of all lymphoma in immunocompetent patients, who were diagnosed between January and October 2009, was done at King Chulalongkorn Memorial Hospital. Patients who were immunocompromised or HIV-positive were excluded. In situ hybridization for EBV-encoded small RNA-1 (EBER) was performed in all paraffin-embedded primary tissues; positive reaction was defined as EBER nuclear signal more than 5% of tumor cells. Overall survival (OS) and progression-free survival (PFS) were analyzed by the Kaplan-Meier method.

Results: There were 97 cases in this study. EBER+ lymphoma were identified in 16/97 (16.5 %) of all cases, 6/76 (7.9%) of all B-cell non-Hodgkin lymphoma (NHL), 5/39 (12.8%) of diffuse large B-cell lymphoma (DLBCL), 7/16 (43.7%) of T/NK-cell NHL, and 3/5 (60%) of Hodgkin lymphoma (HL). The median follow-up time was 52 months. The 5-year OS and PFS in each group of lymphoma according to the EBV status were summarized in the table.

	5-year OS (%)		p value	5-year PFS (%)		p value
	EBER+	EBER-		EBER+	EBER-	
All patients (n = 97)	62.5	53.1	0.717	62.5	48.1	0.494
B-cell NHL (n = 76)	66.7	50	0.623	66.7	48.6	0.573
DLBCL (n = 39)	60	47.1	0.803	60	44.1	0.728
T/NK cell NHL (n = 16)	42.9	77.8	0.108	42.9	44.4	0.650
HL (n = 5)	100	50	0.221	100	50	0.221

For all patients, factors significantly associated with favorable long-term overall survival outcome were age less than 60, normal LDH level, initial response to treatment and limited stage of disease. Rituximab use was also significantly associated with better survival outcomes in DLBCL patients.

Conclusions: In our study, EBER status was not significantly associated with long term survival outcome. Due to the limited power of the study, this needs to be further evaluated in the larger population study.

Low Prevalence of Symptomatic Venous Thromboembolism after Hip and Knee Arthroplasty at Siriraj Hospital

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Background: Venous thromboembolism (VTE) is a common and possibly fatal complication after major orthopedic surgery, especially in hip and knee arthroplasty, among Caucasian. Thus, pharmacological and mechanical thromboprophylaxis are recommended routinely in western countries to reduce the incidence of postoperative VTE. However, pharmacological thromboprophylaxis is not widely used for orthopedic surgery in Thailand because of the belief of a low incidence of postoperative VTE particularly symptomatic VTE and the controversy regarding the risk-benefit and cost-effectiveness in Thai patients.

Objective: To determine the prevalence of symptomatic VTE in patients undergoing arthroplasty without thromboprophylaxis at Siriraj hospital

Materials and Methods: Prospective observational study included consecutive patients aged above 18 years who underwent knee or hip arthroplasty between February 20, 2013 and December 31, 2013. Patients who had taken antithrombotic therapy before operation or had an underlying disease of bleeding disorder were excluded. Data of postoperative symptomatic VTE during hospitalization and three months after discharge were collected. The symptomatic VTE included deep-vein thrombosis (DVT) detected by duplex ultrasonography (or computed tomographic (CT) venography) and documented pulmonary embolism (PE).

Results: A total of 800 patients (668 women) undergoing knee (n = 616) or hip (n = 184) arthropathy had a median age of 67 years (range 18-94 years). There were two women (67 and 89 years old) who developed symptomatic DVT of operated leg at 45 and 16 days after surgery. There was no PE. Thus, the prevalence of symptomatic VTE was 0.25% (95%CI: 0.030 to 0.900%). Tranexamic acid was given in 66% of patients preoperatively and/or postoperatively. Preoperative thrombotic risk included malignancy (3.5%), Tamoxifen use (0.375%), a history of VTE (0.25%), obesity (17.87%), and congestive heart failure (0.625%). Both VTE cases had no thrombotic risk. Supervised calf muscle exercise was employed in 100% of patients postoperatively. Median days of postoperative immobilization were 2 days (range 1 – 30 days). Three patients died within 3 months postoperatively due to disseminated cancer, DRESS syndrome with acute liver failure and congestive heart failure.

Conclusions: Prevalence of symptomatic VTE in Thai patients undergoing major orthopedic surgery was lower than in Western reports. Pharmacological thromboprophylaxis might not be strongly recommended in all Thai patients.

The Neutralizing Effects of Antivenom for Hematotoxic Activities of Malayan Pit Viper Venom

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Introduction: Malayan pit viper (MPV) venom acts as hematotoxin causing bleeding problem. Antivenom is a specific treatment for neutralizing this toxin. However, an appropriate dose of antivenom has not been evaluated. This study is aimed to identify the dose of MPV antivenom that could neutralize hematotoxic effects of venom in vitro.

Materials and Methods: The lyophilized MPV venom and MPV antivenom from Queen Saovabha Memorial Institute of Thailand were used. Platelet-rich plasma was used for source of platelets while fibrinogen concentration (245 mg/dL) and platelet-poor plasma were used for source of fibrinogen. The platelet aggregation was assessed by platelet aggregometry and serum fibrinogen level was measured by Ellis-Stransky method. The minimal amount of venom to induce platelet aggregation and fibrinogen level < 100 mg/dL were identified. The various doses of antivenom were tested for evaluating an appropriate dose that reverted platelet aggregation effect and normalized fibrinogen level.

Results: The minimal concentration of MPV venom inducing platelet aggregation and low fibrinogen level were 0.01 and 0.4-0.43 μg/mL, respectively. MPV venom cannot demonstrate platelet aggregation inhibition activity. Amount of antivenom neutralizing the possible maximal concentration of MPV venom (150 μg/mL shown in other study) was also tested. The range of dose of antivenom were 0.004-0.0155 mL/mL (0.16-0.62 mL/kg) for correcting platelet aggregation activity, and 0.00075-0.18939 mL/mL (0.03-7.6 ml/kg) for normalizing fibrinogen level.

Conclusions: Antivenom can correct MPV venom-induced platelet aggregation and low fibrinogen level in vitro. The ranges of dose of antivenom for neutralizing hematotoxic activities were demonstrated. In vivo clinical application should further studied.

Keywords : ● *Malayan pit viper* ● *Antivenom* ● *neutralizing effect* ● *Platelet aggregation* ● *Low fibrinogen*

Comparison of Prophylaxis and On-demand Treatment in Children with Moderate to Severe Hemophilia A

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Background: The aim of hemophilia treatment is to maintain patients quality of life by preventing bleeding episode and joint damage. Prophylaxis treatment is currently being practiced more widely based on recommendation from international societies. In Thailand most of the hemophilia patients were managed by on-demand treatment whereas only few patients received prophylaxis treatment.

Objective: This study determines to compare the efficacy of prophylaxis and on-demand treatment in moderate to severe hemophilia A children in King Chulalongkorn Memorial Hospital, Bangkok, Thailand.

Study Design: A prospective cohort study.

Materials and Methods: Fifteen patients were included in this study from December 16, 2012 to January 15, 2014. Twelve patients were severe hemophilia A and three patients were moderate hemophilia A. Median age was 11.2 ± 5.3 years. All patients were on-demand treatment according to standard guideline for six months then stopped for 1 month and went on prophylaxis treatment for another six months with infusion of 30-35 units/kg of plasma derived factor VIII (pd FVIII) once a week and subsequent stepwise dose escalation. Evaluations include the number of bleeding episodes, admission days, school days lost and pdFVIII used. Level of factorVIII and factorVIII inhibitor, joint score and quality of life score were also be monitored.

Results: The number of bleeding episodes and school days lost in prophylaxis treatment were significantly lower than on demand treatment (median 1 versus 6 episodes and median 3 versus 8.5 days, $p < 0.001$, respectively). Number of pdFVIII replacement during bleeding episodes in prophylaxis treatment was less than on demand treatment (median 1 versus 7.5 vial (500 units), $p < 0.001$), but total number of pdFVIII used in prophylaxis treatment was higher than on demand treatment (median 34.5 versus 7.5 vial (500 units), $p < 0.001$). Improvement of joint score during prophylaxis treatment was better than on-demand treatment (mean 1.58 versus 1.33, $p = 0.846$) but not statistical significant. Quality of life score after prophylaxis treatment was significantly better than after on demand treatment (median 85.7 versus 72.9, $p = 0.002$).

Conclusions: Patients on prophylaxis treatment had better clinical outcomes including less bleeding episodes, less school days lost and better quality of life compared to on demand treatment.

Keywords : ● *Severe hemophilia A* ● *Moderate hemophilia A* ● *On-demand treatment* ● *Prophylaxis treatment*

Molecular Basis and Hematological Characteristics of Hereditary Persistence of Fetal Hemoglobin and δβ-thalassemia in Thailand

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Background: Hereditary persistence of fetal hemoglobin (HPFH) and δβ-thalassemia are heterogenous disorders characterized by decreased or absent β-globin production and a variable compensatory increase in γ-globin chain production, resulting in elevated hemoglobin (Hb) F levels in adulthood. Their phenotypes and molecular basis are partially overlapping and sometimes difficult to be clearly classified. The previous study demonstrated 3 deletions, including Vietnamese or Thai $(\delta\beta)^0$-thalassemia, HPFH-6 $(^A\gamma\delta\beta)^0$-thalassemia, and Asian-Indian inversion-deletion $(^A\gamma\delta\beta)^0$-thalassemia in Thailand. In this study, we aimed to investigate the hematological and molecular characteristics of high HbF phenotypes in Thai individuals and examined other potential deletions causing HPFH or δβ-thalassemia in Thai population.

Materials and Methods: We performed hemoglobin analysis using isolectric focusing (IEF) and high performance liquid chromatography (HPLC) during 2012-2013. Cases showing unusual elevated HbF levels and/or suspected for HPFH or δβ-thalassemia were subject to molecular analysis using the gap-polymerase chain reaction technique to detect 5 deletions previously reported HPFH and δβ-thalassemia in Asian ethnics. Molecular analyses for α-globin and β-globin gene mutations were investigated when co-inheritance of α-thalassemia and/or β-thalassemia were suspected based on hematological data and hemoglobin analysis results.

Results: There were 55 samples sent for analysis. Five deletional determinants of HPFH or δβ-thalassemia were detected in 31 subjects: 13 Vietnamese $(\delta\beta)^0$-thalassemia, 10 HPFH-6, 3 Asian-Indian inversion-deletion $(^A\gamma\delta\beta)^0$-thalassemia, 3 Chinese $(^A\gamma\delta\beta)^0$-thalassemia and 2 Hb Lepore. Pure heterozygotes of these deletions had normal or mild thalassemia phenotypes. There were 2 cases of compound heterozygosity for Vietnamese $(\delta\beta)^0$-thalassemia and HbE, which they had normal Hb (14.1 and 13.7 g/dL) and HbF higher than 40%. These features may be suggestive of compound heterozygosity for HPFH/δβ-thalassemia and HbE than compound heterozygosity for β-thalassemia and HbE. There were 3 cases of compound heterozygosity for HPFH-6 and β-thalassemia (2 β^0 and 1 severe β^+-thalassemia), which they had marked anemia (Hb of 6.2, 7.1 and 7.7 g/dL). Two Hb Lepore heterozygotes showed unusually increased HbA_2 levels (10.9% and 10.4%) on HPLC, but normal HbA_2 levels on IEF. Furthermore, an abnormal hemoglobin variant was detected only on IEF in both HbLepore heterozygotes (15.5% and 13.9%).

Conclusions: We identified 5 deletions causing HPFH and δβ-thalassemia in Thais. The interactions between these deletions with β-thalassemia determinants result in various phenotypes. Hb Lepore has a suggestive hemoglobin analysis characteristic when IEF and HPLC are concurrently performed.

Keywords : ● *Hereditary persistence of fetal hemoglobin* ● δβ*-thalassemia* ● *Hemoblobin Lepore*

Validation of the DMSc Alpha-thal 1 Plus for Detection of Alpha-thalassemia 1 (SEA and Thai Deletions)

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Background: Alpha-thalassemia 1 is one of the most common genetic abnormalities in Thailand. Strategies for the prevention and control of thalassemia require the identification of individuals at risk for having offspring with homozygous alpha-thalassemia 1 or Hb Bart's Hydrops Fetalis. In 2008 the Department of Medical Sciences (DMSc) implemented the DMSc alpha-thal 1 kit for detection of alpha-thalassemia 1; SEA and Thai deletions, through 13 Regional Medical Sciences Centers throughout country. The DMSc alpha-thal 1 kit is the triplex TaqMan-based relative quantitative PCR assay that uses the reporter dyes FAM, VIC and NED for detection of normal alpha-globin gene, Thai deletion and SEA deletion; respectively. Because of these dyes composition, the assay could be used with the ABI real time PCR only.

Objective: This study aimed to develop the DMSc alpha-thal 1 plus which is a similar assay using a different dye configuration (FAM, VIC and Cy5) appropriate with the other real time PCR platforms. The delta Ct was determined by subtracting the normal alpha-globin Ct from the mutant Ct.

Materials and Methods: DNA samples from 301 individuals, including 195 normal subjects, 99 carriers (SEA deletion) and 7 carriers (Thai deletion) were used in the validation study. All samples of normal subjects amplified only the normal alpha-globin gene whereas those of alpha-thalassemia 1 carriers amplified both normal alpha-globin gene and one of target mutant gene.

Results: All results from the DMSc alpha-thal 1 plus conducted with the qTower and the CFX96 real time PCR platforms were in accordance with the reference methods including the DMSc alpha-thal 1 kit and the DNA sequencing. The precision study was accomplished using of replicate analyses and %CV of Ct values. The %CV of within-run and between-run precision were 0.67-2.00% and 0.98-4.27%, respectively. This assay takes about 2.5 hours including amplification and data analysis.

Conclusions: The DMSc alpha-thal 1 plus is reliable, rapid and cost-effective assay. It is useful for detection of alpha-thalassemia 1 in population with a high frequency of alpha-thalassemia 1, SEA and Thai deletions.

Keywords : ● *Alpha thalassemia 1* ● *Relative Quatitative PCR*

Prevalence and Risk Factors of Complications in Patients with Thalassemia Intermedia

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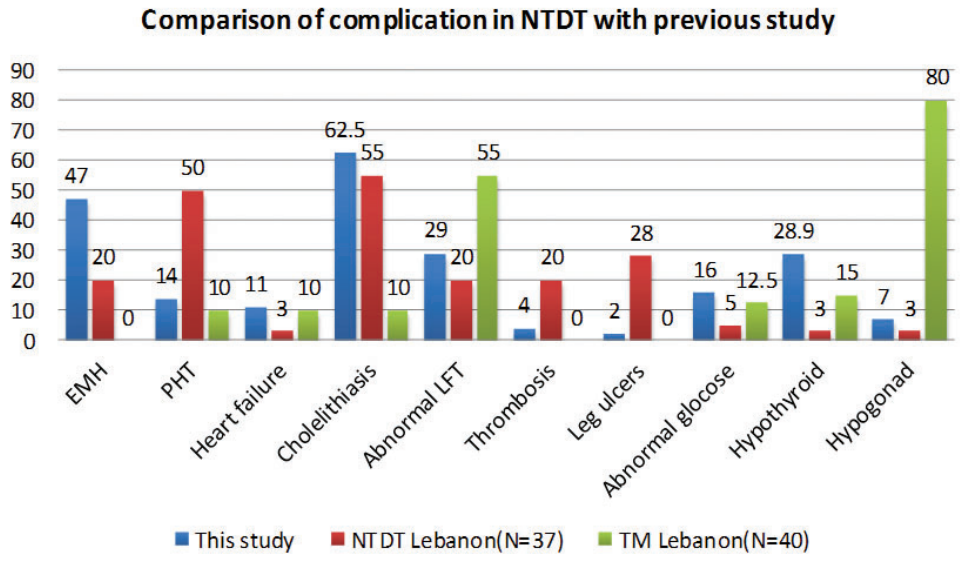
Background: Thalassemia intermedia (TI) or Non-transfusion dependent thalassemia (NTDT) is a mild form of thalassemia and does not require regular transfusion. Many complications can be found in this disease and different from thalassemia major (TM). This study aims to elucidate the prevalence of complications and identify predictive factors affecting complication of NTDT patients in Northern Thailand.

Materials and Methods: We retrospectively reviewed NTDT patients who attended our clinic from 1 January 2012 to 31 December 2013. Medical record was reviewed for complication and clinical data.

Results: One hundred NTDT patients were included in this study, female (60%), median age 38 years (19-78). Alpha thalassemia was the majority population (54%). Interestingly, overall complications were found in 83%. The three most common were cholelithiasis (62.5%), extramedullary hematopoiesis (47%) and abnormal liver function (29%). The others were osteoporosis (18%), abnormal plasma glucose (16%), pulmonary hypertension (14%), hypothyroidism (13%), heart failure (11%), hypogonadism (7%), thrombosis (4%), and leg ulcer (2%), respectively. The mean ferritin level was 1,563.46 ng/mL. Forty four and seventy six percent of patients had ferritin level more than 2,500 and 800 ng/mL, respectively.

The significant risk factors affecting complications in extramedullary hematopoiesis were female with odd ratio 2.76 (95%CI: 1.046-7.294, p = 0.040) and hemoglobin level below 8 g/dL with odd ratio 3.08 (95%CI: 1.113-8.521, p = 0.03) and the significant risk factors affecting complications in osteoporosis were female with odd ratio 7.64 (95%CI: 1.514-38.604, p = 0.014) and age more than 40 years with odd ratio 4.66 (95%CI: 1.313-16.506, p = 0.017). Iron overload (ferritin > 800 ng/mL) was the only risk factor for abnormal liver function from this study with odd ratio 3.79 (95%CI: 1.033-13.919, p = 0.035), but trend to be statistical significant in other complications. Three patients were death and all of them died from sepsis.



Conclusions: Alpha thalassemia is the common type of NTDT in our study which is different from previous study. The complication in NTDT is also different from TM. The most common complications were cholelithiasis, extramedullary hematopoiesis and abnormal liver function which were similar to previous study from other regions despite there were different populations. The prevalence of iron overload was high in these patients. Thus, regular iron monitoring and early investigation for complication detecting were necessary in this group of patients.

Clinical Characteristics and Long Term Outcomes of Warm Type Autoimmune Hemolytic Anemia

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Background: Warm type autoimmune hemolytic anemia (AIHA) is the disease which antibody reacts with self-antigen on red blood cell. Due to the uncommon of this disease, there is a little data about long term outcomes and response to therapy especially second line treatment.

Materials and Methods: This is a retrospective single center study from 2002 to 2013. The diagnosis of AIHA was by positive direct Coombs' test and confirmed by Hematologist. Clinical data and long term outcome were reviewed and analyzed.

Results: During that period, 101 patients were reviewed, 77% were female, median age was 43 years (15-83). The median hemoglobin level at diagnosis was 5.4 g/dL (2-10). Primary AIHA was found in 61%. The secondary causes were SLE (64%), solid malignancy (13%), lymphoma (10%), drug (8%) and infection (5%). The secondary cause from SLE was commonly found in female (96%) ($p = 0.05$). There was the difference of age between secondary cause from SLE (< 50 years) and malignancy (> 50 years) ($p = 0.014$).

Most patients (96%) were initially response to steroid which was not different between primary and secondary AIHA. Second line treatments were required in 33 patients (33%). The indications were steroid dependent (58%), relapse (30%) and others (12%). The second line treatments were including cyclophosphamide (52%), azathioprine (21%), cyclosporine (6%), splenectomy (6%), danazol (6%) and others (9%). The overall response rate for second line was 93%. SLE group received second line therapy more than non SLE group ($p < 0.001$). Most relapse occurred > 3 years after diagnosis (58%) and more common in SLE group ($p < 0.001$).

At the median follow up 48 months, the 4 year OS and EFS (relapse and death) were 84% and 48%, respectively. The independent factor for decreasing OS was age > 50 years with HR 3.09 (95%CI: 1.09-8.73, $p = 0.03$) and malignancy with HR 4.06 (95%CI: 1.18-13.97, $p = 0.03$). The only significant factor for relapse is age > 50 years with HR 2.08 (95%CI: 1.21-3.57, $p = 0.008$). Thirty one patients were loss to follow up and 20 patients were death. The common cause of death was sepsis (30%).

Conclusions: AIHA has good prognosis and long term survival especially in young patient without secondary malignancy. Most patients have responded initially to steroid and high response rate to second line therapy. The most common cause of death was sepsis which related to treatment side effect. The prospective study should be warranted to confirm our data.

Treatment Outcomes of Childhood Newly Diagnosed Immune Thrombocytopenia in Thai Patients

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There are many clinical practice guidelines in newly diagnosed immune thrombocytopenia (NITP), so treatment decisions are based on clinicians' opinions. Steroid, intravenous immunoglobulin (IVIG) and observation are the treatment options that have different outcomes and complications.

Objective: To evaluate treatment outcomes in term of increase of platelet counts and the incidence of chronic ITP (CITP) among different treatment strategies.

Materials and Methods: We reviewed the patients' medical records diagnosed with NITP at age of 3 months to 15 years at Siriraj hospital between 2006-2010.

Results: Ninety seven patients were treated in 5 different protocols, observation (Obs) 13 patients (13.4%), prednisolone 2 mg/kg/day for 14 days (P2) 24 patients (24.7%), prednisolone 4 mg/kg/day for 4 days (P4) 27 patients (27.8%), pulse methylprednisolone (MP) 5 patients (5.1%) and IVIG 0.8-1 g/kg for 1-2 days 28 patients (28.9%). The median response time for all treatments was 13 days (Obs: 55 days, P2: 15 days, P4:12 days, MP 12 days, and IVIG 3 days). The response time in IVIG was significantly faster than in Obs and P2 (p = 0.002 and 0.01) and in P4 is significantly faster than Obs (p = 0.03) but the response time between other groups were not statistically significant. There were 31 patients lost follow up and 2 patients died, so 64 patients were followed up at least 1 year. Five of 7 patients in Obs (71.4%), 6 of 15 in P2 (40%), 5 of 19 in P4 (26.3%), 1 of 5 in MP (20%), and 1 of 18 (5.6%) in IVIG group were CITP (5.6%). The patients who were CITP in IVIG group is lower than in Obs and P2 significantly (p = 0.002 and 0.03) but in between the other groups were not statistically significant.

Conclusions: The response time in IVIG group is faster than Obs, P2 and P4. The incidence of CITP in IVIG group is lower than in Obs and P2 group. The results may be applied to treatment guideline for each patient condition.

งานวิจัยนี้ได้รับทุนสนับสนุนจากสมาคมโลหิตวิทยาแห่งประเทศไทยเพื่อเดินทางไปเข้าร่วมประชุมและเสนอผลงานเป็น Oral Presentation ในงาน The 75th Annual Meeting of Japanese Society of Hematology (JSH 2013) ระหว่างวันที่ 11-13 ตุลาคม 2556

Hypercoagulability in Splenectomized β-thalassemia/Hemoglobin E Patients

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Introduction: Thromboelastography detects viscoelastic changes during blood coagulation. This method has been used widely during surgery such as liver transplantation, cardiac surgery or to guide transfusion therapy in trauma patients. Here, we demonstrate hypercoagulability in splenectomized β-thalassemia/Hemoglobin E (β-thal/HbE) patients by using whole blood thromboelastometry.

Materials and Methods: Citrate-anticoagulated blood from 8 splenectomized β-thal/HbE patients and 32 controls was analyzed by rotational thromboelastometry (ROTEM®) instrument. Whole blood viscoelasticity properties were reported as clot time (CT, second), clot formation time (CFT, second), alpha angle (α), amplitude at 10 and 20 minutes (A10, A20, mm) and maximum clot firmness (MCF, mm).

Results: There was no difference between CT from control blood and thalassemic blood. Clot formation time in thalassemia group was shorter than CFT in control group (52.00 ± 11.94 vs 82.97 ± 22.73, $p = 0.0001$). Alpha angle in thalassemic group was higher (79.75 ± 2.92 vs 73.69 ± 4.28, $p = 0.003$). Increased MCF was illustrated in thalassemia blood (72.13 ± 4.88 vs 64.66 ± 8.46, $p = 0.009$) compared to control. This observation was also observed by A10 and A20 values in blood from thalassemia patients.

Conclusions: Here, we show shorter CFT, wide α-angle, increased amplitude and MCF in whole blood from splenectomized β-thal/HbE group suggesting the hypercoagulable state in these patients. Changes in these parameters indicate increase in clot formation (CFT, α angle) and clot firmness (amplitude, MCF) which are affected directly by number and function of platelets and fibrinogen as well as other cellular components such as erythrocytes and leukocytes. Our findings point to platelets and/or blood cells as important determinants of the thrombotic risk observed in splenectomized β-thal/HbE patients.

Molecular Genetic Markers for Thai Adult Acute Myeloid Leukemia with Normal Karyotype

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Background: Acute myeloid leukemia (AML) is characterized by a high degree of heterogeneity with respect to chromosome abnormalities, gene mutations, and changes in expression of multiple genes. To date, only diagnosis of NPM1, FLT3-ITD and CEBPA mutations has entered clinical practice and affects diagnosis, risk assessment, and also guidance of therapy.

Objective: In this study, wecharacterized cytogenetic and molecular alterations of Thai adult AML patients.

Study designs: A cohort study of 108 de novo adult AML patients treated in Ramathibodi Hospital during 2009-2013 were assigned to four subgroups by the cytogenetic risk profiles of the European Leukemia Net (ELN) recommendations for classification and by the molecular markers NPM1, FLT3-ITD and CEBPA in patients with normal karyotype (NK-AML).

Materials and Methods: Cytogenetic analysis of bone marrow or peripheral blood from AML patients were performed using conventional karyotyping. In addition, DNA was extracted from bone marrow or peripheral blood for analysis of NPM1, FLT3-ITD and CEBPA gene mutation.

Results: According to the ELN recommendations for classification, sixteen (14.8%) patients were classified to favorable group [4 (3.7%) with t(8;21)(q22;q22), inv(16)(p13.1q22) and 12 (11.1%) with normal karyotype; 7 (6.5%) mutated NPM1 without FLT3-ITD mutation, or 5 (4.6%) CEBPA mutation]. Forty-three (39.8%) patients were classified to intermediate I group which depend on NPM1 and FLT3-ITD mutation in patients with normal karyotype. In NK-AML, 27.3% FLT3-ITD presenceeither mutated NPM1 or wild-type NPM1 were found. Others were wild-type NPM1 and without FLT3-ITD mutation. Thirty-three (30.6%) patients were classified to intermediate II group [patient with t(9;11)(p22;q23) and all cytogenetic abnormalities not classified as favorable or adverse]. Sixteen (14.8%) patients were classified to adverse group due to carrying an inv(3)/t(3;3), -5 or del(5q), or complex karyotype.

Conclusions: Our combination of cytogenetic and molecular information allows to subgroup of adult AML patients in Thai population. This data may be applied to a broad range of patients to help in clinical decision making and prognostication.

Lenalidomide Consolidation Therapy after Autologous Stem Cell Transplantation in Multiple Myeloma Patients, Preliminary Data

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Introduction: High dose chemotherapy with autologous stem cell transplantation is the standard frontline treatment in eligible multiple myeloma patients. The residual disease significantly contributes to relapse. Consolidation therapy followed by maintenance therapy with immunomodulatory drugs (IMIDs) was shown to improve progression free survival and decrease relapsed rate. However, the cost-effectiveness of long-term treatment with IMIDs has to be considered. This study aims to verify the efficacy and toxicity of a two-month treatment with lenalidomide as a consolidation therapy. Primary endpoint is the depth of response.

Materials and Methods: Nineteen cases of patients with multiple myeloma who underwent autologous stem cell transplantation were included to receive lenalidomide at the dosage of 25 mg per day, 21 days per month for 2 months as a consolidation therapy. The patients were assessed for depth of response post-autologous stem cell transplantation and at the end of consolidation.

Results: From December 2012 to January 2013, nineteen patients (11 male, 8 female) with median age of 52 years (range 41 to 70) were included in the study. The international staging I, II, III were 21%, 32%, 47%, respectively. The subtypes of multiple myeloma were IgG kappa (68%), IgG lambda (16%), IgA kappa (11%), kappa (5%). All patients who were treated with bortezomib-based regimen prior autologous transplantation (ASCT). Baseline status of these patients prior to ASCT were 7 cases with VGPR and 12 cases with CR. Evaluation for response post autologous stem cell transplantation, 5 of 19 cases had improvement of response from VGPR to CR and 12 of 19 cases remained in CR. The depth of response at the end of consolidation therapy remained unchanged. Median follow-up time were 7.9 months (range 2 to 15). The side effects included hematologic and non-hematologic toxicities were rare.

Conclusions: Lenalidomide consolidation is safe and feasible. The patients tolerated therapy very well without significant toxicity. The follow-up time is too short to demonstrate the efficacy of consolidation on progression free survival.

Poster Presentation

The Prevalence of Thrombocytopenia in Adults Receiving Valproic Acid: A Retrospective Study

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Background: The frequency of valproic acid (VPA)-induced thrombocytopenia varied widely in previous studies, due to methodological differences and report in Thai are rare.

Objective: To investigate the prevalence and potential risk factors of thrombocytopenia in adults patients receiving valproic acid in Phramongkutklao Hospital.

Study Design: Retrospective study

Materials and Methods: Data from patients hospitalized between January 1, 2003, and December 31, 2013, who were receiving VPA and had at least one platelet count recorded before and after exposure to VPA.

Results: Of 164 VPA-treated patients 10.7% of patients experienced at least one episode of thrombocytopenia (platelet count $\leq$ 100,000/μL). VPA dosage greater than 1,000 mg/day ($p < 0.001$) were identified as significant risk factors for developing thrombocytopenia. No report of clinically significant bleeding.

Conclusions: The estimated prevalence of thrombocytopenia is 10.7% in adults receiving VPA, with the high-dose VPA at greatest risk.

Keywords : ● *Thrombocytopenia* ● *Valproic acid (VPA)* ● *VPA dosage*

Prevalence of Von Willebrand's Disease in Thai Women with Menorrhagia in Phramongkutklao Hospital

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Objective: Menorrhagia causes anemia and impairment of life quality. Menorrhagia is a common gynecological problem, seen in reproductive-aged woman. Von Willebrand disease (vWD) is a common, inherited, bleeding disorder caused by a deficiency or dysfunction of the protein termed von Willebrand factor (vWF). Currently, there is no consensus on application of von Willebrand disease (vWD) testing as part of the routine investigations in menorrhagia. In this study the aim was the screening of vWD in Thai young women with menorrhagia in Phramongkutklao Hospital.

Study Design: The study was a cross-sectional study.

Materials and Methods: A form including age of patients, demographic characteristics of patients, familial bleeding history, bleeding history other than menorrhagia, history of medicine such as of oral contraceptive or antiplatelet drugs, characteristics of the menorrhagia was filled out by the researcher by face-to-face interview with the patient. A pictorial blood assessment chart was also used for evaluation of blood loss. And von Willebrand factor antigen (vWF:Ag) was performed in patients who met menorrhagic criteria.

Results: Of 246 patients, 50 patients met criteria of menorrhagia. In 10% (5) of patients with menorrhagia, a bleeding disorder was detected. (low vWG:Ag).

Conclusions: In patients with menorrhagia with unexplained causes, vWF:Ag should be considered as a further investigation if initial hemostatic profile such as platelet count, prothrombin time(PT), activated partial thromboplastin time(aPTT) were normal. All patients with menorrhagia must consult with gynecologists and hematologists.

Keywords : ● *von Willebrand disease* ● *Menorrhagia*

Outcome and Prognosis in Patients with Chronic Phase Chronic Myeloid Leukaemia on Imatinib Mesylate Initial Therapy at Phramongkutklao Hospital

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Background: The introduction of the first targeted tyrosine kinase inhibitor (TKI), imatinib mesylate (IM) dramatically improved outcomes of chronic phase CML. The data are limited in developing countries.

Objective: To analyses the clinical outcome and prognosis in chronic phase CML patients who received imatinib mesylate for 1 year in Phramongkutklao Hospital.

Materials and Methods: The medical records of all patients who diagnosis chronic phase CML and received imatinib mesylate at least for 1 year, follow up at Division of Hematology, Department of Medicine, Phramongkutklao Hospital from 1 January 1995 to 31 January 2013 were reviewed. Monitoring response was defined as the ELN guidelines. Response (hematologic, cytogenetic, and molecular responses) outcome were evaluated.the factors associated with outcome of imatinib mesylate therapy were also analyzed.

Results: A total of 35 medical records of chronic phase CML patients who received imatinib mesylate for 1 year: The median age was 52 years. Twenty two patients were male (62%), splenomegaly was present in 29 of 35 (82%). At diagnosis the sokal risk was low in 11 (31.5%), intermediate in 11 (31.5%) and high in 13 patients (37%). The Eutos risk was low in 28 (80%) and high in 7 patients (20%). The rate of cumulative complete cytogenetic response (CCyR), partial cytogenetic response (PCyR), complete molecular response (CMR) and major molecular response (MMR) in chronic phase CML patients were 91.4%, 5.7%, 48.6% and 40%, respectively. Accordng to the 2009 ELN criteria, optimal, suboptimal response and failure were noted in 31 (88%), 3 (9%) and 1 (3%).

Conclusions: Imatinib mesylate is expected to improve the results of the first line treatment of high and low risk group in chronic phase CML patients .

Keywords : ● *Chronic phase chronic myeloid leukemia* ● *Sokal risk score* ● *Eutos risk score* ● *Imatinib mesylate* ● *Complete cytogenetic response* ● *Complete molecular response*

Incidence and Characteristics of Polycythemia Vera, Essential Thrombocythemia and Primary Myelofibrosis in Siriraj Hospital: A 5-Year Retrospective Study

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Background: Polycythemia vera (PV), essential thrombocythemia (ET) and primary myelofibrosis (PMF) are members of myeloproliferative neoplasm group. They shared common features such as JAK2 V617F+ mutation, thrombosis or hemorrhage, progression to marrow fibrosis or acute leukemia.

Objective: To study incidence and clinical characteristics of PV, ET and PMF with complications and treatment modalities.

Study Designs: Retrospective chart review

Materials and Methods: All JAK2 V617F+ and V617F- mutation patients during 2008-2012 were reviewed for demographic data, diagnosis of PV, ET and PMF according to WHO 2008 criteria, complications and treatment.

Results: Three hundred sixty three of 735 patients were 140 PV, 172 ET, 47 PMF and 4 MPN-U. Three hundred seventy two patients were excluded due to routine thrombotic workup (98), secondary erythrocytosis (97), reactive thrombocytosis (55), CML (26), HES/eosinophilia (24), MPN/MDS (3), others (69). In PV, JAK2 V617F+ and JAK2 exon 12 mutation patients were 106 and 2. PV showed male:female ratio of 85:55, mean age 57.7 year (11-86), mean hemoglobin 17.6 g/dL (6.7-24.6), and received aspirin (125), hydroxyurea (116), phlebotomy (84), clopidogrel (10), warfarin (7), anagrelide (6), busulfan (5) and each for interferon, oxymethalone, corticosteroid, and JAK inhibitor. Thrombosis:hemorrhage was 34:16. Myelofibrosis and AML transformation were 7 and 2. In ET, JAK2 V617F+ patients were 121. ET showed male:female ratio of 83:89, mean age 59.45 year (14-91), mean platelet count 924,168/mm^3 (283,000-2,235,000), and received aspirin (140), hydroxyurea (139), anagrelide (47), warfarin (11), clopidogrel (7), erythropoietin (6), oxymethalone (3), busulfan (3), corticosteroid (2), interferon (1) and splenectomy (1). Thrombosis:hemorrhage was 52:16. Myelofibrosis and AML transformation were 4 and 1. In PMF, JAK2 V617F+ patients were 32. PMF showed male:female ratio of 21:26, mean age 62.2 year (23-81), mean hemoglobin 8.6 g/dL (3.7-15.5), mean subcostal splenic size 10 cm (1-26) and received hydroxyurea (26), erythropoietin (16), corticosteroid (10), oxymethalone (8), JAK inhibitor (7), transfusion dependency (6), aspirin (3), warfarin (2) and each for anagrelide, thalidomide, splenectomy and allogeneic transplantation. Thrombosis:hemorrhage was 4:5. AML transformation was 4. In multivariate analysis, previous thrombosis, clopidogrel use, splenomegaly, alcohol use and JAK2 V617F+ were independent risk factors for thrombosis.

Conclusions: PV, ET and PMF carry high risk for vascular events.

Keywords : ● *Polycythemia vera* ● *Essential thrombocythemia* ● *Primary myelofibrosis* ● *Thrombosis* ● *Hemorrhage*

A 2-Year Retrospective Study of SMILE Regimen as A First-Line Treatment of Patients Diagnosed of Extranodal NK/T-Cell Lymphoma, Nasal Type in Siriraj Hospital

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Background: Extranodal NK/T-cell lymphoma, nasal type (ENKTL) is a rare and highly aggressive lymphoma with grave prognosis. Optimal standard therapy is controversial. Conventional protocol such as CHOP or CHOP-like regimens result in dismal outcome with poor overall survival (OS). New SMILE regimen consisting of methotrexate, etoposide, ifosfamide, dexamethasone and L-asparaginase has been proposed with a more favorable outcome.

Objective: To study the clinical response and OS in newly diagnosed ENKTL patients treated with first-line SMILE regimen.

Study Design: Retrospective review.

Materials and Methods: All newly diagnosed ENKTL patients during 2012-2013 were reviewed.

Results: Of all 21 patients, median age was 53 years (26-78) with M:F ratio of 12:9. Presenting extranodal sites were nasal cavity (16), bone marrow (10), skin (1), lacrimal (1) and adrenal gland (1). Stages of I, II, and IV were 5, 3, and 13, respectively. International Prognostic Index (IPI) of 0-1, 2, 3, and 4-5 were 8, 5, 4 and 4, respectively. EBV DNA (EVD) was found in 8/12 with median 17,875 copies/mL (316-1,290,000; 6). Ten were excluded due to first-line treatment with radiation (1), CHOP (6), CVP (1), methylprednisolone (1) and dexamethasone (1).

Remaining 11 patients showed median age of 52 years (26-64) with M:F ratio of 6:5. Stages of I, II and IV were 3, 3 and 5, respectively. Respective IPIs were 6, 3, 1 and 1. EVD was found in 6/8 with median 1,630 copies/mL (316-1,290,000; 5). Two, 2 and 7 patients received 1, 2, and 3 cycles (mean 2.45). Additional treatments were radiation (4) and intrathecal chemotherapy (1). Outcome assessment showed CR (4), PR (3), PD (4) and treatment-related complications were found in 7 patients [febrile neutropenia (7), tumor lysis syndrome (1), cardiomyopathy (1), septic shock (1)]. Five patients died of infection during SMILE regimen (3), and during salvage therapy for PD (2). L-asparaginase toxicity was found in 10 patients [hypofibrinogenemia (9), bleeding (1), hypersensitivity (1)]. Median fibrinogen level was 72.6 mg/dl (46.5-110.3) with one overt bleeding. Mean OS was 10.54 months [95%CI: 5.52-15.56]. Median follow-up time was 4.60 months (1.25-18.83).

Conclusions: SMILE regimen may be a more effective first-line treatment of ENKTL patients.

Keywords : ● *Extranodal NK/T-cell lymphoma* ● *SMILE*

Outcomes of Hematopoietic Stem Cell Transplantation in Severe Thalassemia Patients by Using Myeloablative Versus Reduced Toxicity Conditioning Regimens Following a New Risk Stratification

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Background: Improving outcomes among class 3 thalassemia patients receiving allogeneic hematopoietic stem cell transplant (HSCT) remains a challenge. Prior to HSCT, patients who were > 7 years old and had a live size > 5 cms constitute what the Center for International Blood and Marrow Transplant Research (CIBMTR) previously defined as a very high-risk subset of a conventional high risk class 3 group (Class 3 HR).

Objective: We would like to study the outcomes of HSCT in thalassemia patients by using myeloablative versus reduced toxicity regimens.

Materials and Methods: We performed HSCT in 109 patients with related and unrelated donor stem cells. Twenty six patients with age > 10 years and hepatomegaly (Class 3 HR) underwent HSCT with reduced toxicity conditioning (RTC) regimen (fludarabine and busulfan). The other 83 patients with age < 10 years received myeloablative conditioning (MAC) regimen (cyclophsphamide, busulfan, + fludarabine).

Results: We have compared the outcomes between 2 groups. The results showed that both event free and overall survival rates were not significantly different between 2 groups (MAC vs RTC); the event free survival were 88% (95%CI: 78.8-93.3%) and 89% (95%CI: 68.4-96.1%) respectively (p = 0.94) and the overall survival were 92% (95%CI: 83.1-95.9%) and 89% (95%CI: 68.4-96.1%) respectively (p = 0.66)

Conclusions: We suggested that with the approach of using new risk stratification (age < vs > 10 years and hepatomegaly) following MAC vs RTC regimens can give the excellent outcomes for all thalassemia patients.

Glomerular Diseases Associated with Chronic Graft-versus-host Disease after Allogeneic Peripheral Blood Stem Cell Transplantation

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Chronic graft-versus-host disease (cGVHD) is the major complication following allogeneic stem cell transplantation (allo-SCT). Nephrotic syndrome (NS) and other glomerulonephritis have been proposed to be the very rare forms of renal cGVHD. From 1991 to 2011, 253 patients underwent allo-SCT at our center. We report here 4 cases (1.6%) presenting with varieties of glomerular manifestations associated with cGVHD. The first case was typical NS. The renal pathology showed membranous nephropathy (MN). The second case was also MN, but this patient also had the pathology of focal segmental glomerulosclrosis (FSGS) and acute tubular necrosis (ATN). The third case showed lupus nephritis-like glomerular lesions with a high anti-nuclear antibody (ANA) titer. The fourth case presented with rapidly progressive glomerulonephritis (RPGN)-like symptoms. The kidney histology in this case was not available. The patient responded well to immunosuppressive therapy, but nephrotic syndrome later recurred. Therefore, overt glomerular diseases after allo-SCT in Thai patients are not very rare. Monitoring urinalysis during follow-ups of cGVHD patients may be considered.

Keywords : ● *Chronic graft-versus-host disease* ● *Glomerular disease* ● *Allogeneic stem cell transplantation*

Applying Molecular Immunohematology to Regularly Transfused Thalassemic Patients in Thailand

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Background: Red blood cell (RBC) transfusion is the principal therapy in patients with severe thalassemias and hemoglobinopathies, which are prevalent in Thailand. Serologic RBC typing is confounded by chronic RBC transfusion, because of circulating donor RBC.

Objective: To evaluate the concordance of the serologic RBC phenotypes between a routine and a reference laboratory and with RBC genotyping

Materials and Methods: Ten consecutive Thai patients with fff652-thalassemia major who received regular transfusions were enrolled in Thailand. RBC phenotypes were tested serologically at Songklanagarind Hospital and at the NIH. RBC genotyping was performed with commercially available kits and a platform.

Results: In only 3 patients, the RBC genotyping was concordant with the serologic RBC phenotypes for 5 antithetical antigen pairs in 4 blood group systems at the 2 institutions. At NIH, 32 of the 100 serologic tests yielded invalid or discrepant results. The positive predictive value of serology did not reach 1 for any blood group system at either of the two institutions in this small set of 10 patients.

Conclusions: Within this small study, numerous discrepancies were observed between serologic RBC phenotypes at the 2 hospitals; RBC genotyping enabled determination of the blood group, when serology failed due to transfused RBC. We question the utility of serologic tests in regularly transfused pediatric patients and propose to rely solely on RBC genotyping, which requires training for laboratory personnel and physicians. RBC genotyping outperformed RBC serology by an order of magnitude in regularly transfused patients.

Interphase Cytogenetic Abnormality in Patients with Multiple Myeloma at Ramathibodi Hospital

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Introduction: Cytogenetic abnormality plays an important role in prognosis of patients with multiple myeloma. Conventional cytogenetic assay reveal limited result. In this study, we performed interphase fluorescence *in situ* hybridization (I-FISH) analysis to explore the incidence of cytogenetic abnormalities in patients with multiple myeloma at Ramathibodi Hospital.

Materials and Mathods: Heparinized bone marrow was evaluated for interphase cytogenetic study. Four FISH probes specific for deletion13, deletion17, t(4;14), t(11;14) were used in analysis.

Results: Fifty-five patients were included from March 2013 to December 2013. The incidence of interphase cytogenetic abnormality was 34 of 55 (61.8%) cases. Thirteen cases (23.6%) had at least one type of abnormality, 11 (20%) and 4 (7.3%) cases had two and three abnormalities, respectively. The most frequent abnormality was 13q14.3 deletion (40%) followed by 17p13.1 deletion, LSI IGH/FGFR3 and LSI IGH/CCND1 (5.45% each). Furthermore, we found other abnormalities, such as, three copies of 11q13 (16.36%), 4p16 deletion (5.45%) and tetrasomy (1.82%). It was unable to evaluate the results in 6 patients (10.91%). Clinical outcome and prognostic values are being followed.

Conclusions: The most common cytogenetic abnormality finding in this study is 13q14.3 deletion. The prognostic impact on response to chemotherapy and survival among these patients need to be determined in long-term follow-up.

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Holistic Care Model for Children with Cancer in a Developing Country; Southern Childhood Cancer Network of Thailand's 3-Year Experience

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Background: Songklanagarind Hospital is a tertiary hospital in Southern Thailand. Each year about 80-100 newly diagnosed pediatric cancer patients in the region are treated at our hospital. Although the cost of chemotherapy is subsidized by the government, many children and families still cannot access healthcare services because they cannot afford the cost of living at or near, and transportation to, the tertiary care center. Furthermore, the diagnosis is often delayed due to a lack of awareness about childhood cancer by medical personnel. Treatment is often abandoned because of the parents' attitude and socioeconomic status.

Methods: In 2010, the Holistic Care Program was established with funding from the Union for International Cancer Control (UICC) under the "My Childs Matters" program. By collaborating with the National Health Security Office (NHSO), the Southern Childhood Cancer Network was established. The 3-year project was run with the continuous support of the UICC.

Results: A temporary building was arranged for children with cancer (occupancy 14 beds) who live in other provinces and could not afford a place to stay during treatment. This improved treatment adherence and decreased the financial constraint on families. The Childhood Cancer Network was established in Southern Thailand, it included 14 hospitals, and 44 health care personnel. An annual meeting and education conference were held to discuss treatment strategies. Clinical practice guidelines were established to decrease delayed diagnosis and treatment complications. Five chemotherapy regimens were switched from in-patient to out-patient services at local hospitals by pediatricians resulting in a decrease of admissions in 131 patients. The patients visited local hospitals for chemotherapy on average 3 times per patient. Travel time decreased from 156 min to 37 min per visit and the travel cost decreased from an average of 37.9 USD to 10.2 USD per visit.

Conclusions: The holistic care model improved the treatment adherence and quality of life for children with cancer. The networking program could also decrease travel costs and time, therefore improving the quality of life for the families of children with cancer in Southern Thailand.

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งานวิจัยนี้ได้รับทุนสนับสนุนจากสมาคมโลหิตวิทยาแห่งประเทศไทยเพื่อเดินทางไปเข้าร่วมประชุมและเสนอผลงานเป็น Poster Presentation ในงาน 45th Congress of the International Society of Paediatric Oncology" ที่ประเทศฮ่องกง ระหว่างวันที่ 11-13 ตุลาคม 2556