leukaemia (APL) are observed in around 30% of cases. Their presence seems to not have any impact on prognosis. The aim of our study is to analyse impact of additional cytogenetic abnormalities on complete remission rate (CRR), event free survival (EFS) and overall survival (OS) in 34 consecutives patients with APL and t(15,17) treated with APL93 protocol between 1998 and 2004. Median age was 28 yr (6-60yr). Median WBC was 3000/mm³ (600-97000/mm³). Informative karyotype was obtained in all patients, additional cytogenetics abnormalities were seen in 9 patients:26,47% (9/34).These abnormalities were:+8(4),add 9q(1),del 9q12;q31(1),i der17q(1),add15p11(1),add 5p15(1). For all patients CRR was 82%(28/34), failure of induction was due to 6 toxic deaths: sepsis (1), ATRA syndrome (2), SNC hemorrhage (2), and diabetes (1). EFS at 4 yr is 63, 47% and OS at 4 yr is 69, 72%. Outcome was similar between patients with t(15,17) alone and patients with additional cytogenetic abnormalities for CRR:84%(21/25) vs 77.7%(7/9) p=0.6,for EFS at 4 yr :62,02% vs 66,67% p=0.74,and for OS at 4 yr:64,81% vs 70,88% p=0.5. Our study does not find any significative impact of additional abnormalities despite a little advantage for EFS and OS for this group.

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HUMORAL IMMUNE RESPONSE AGAINST THE PRAME ANTIGEN IN PATIENTS WITH MYELOID LEUKEMIAS

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Backgrounds. The PRAME (preferentially expressed antigen in melanoma) is expressed at high levels in various malignant tumors including hematopoietic malignancies, especially in acute myeloid and lymphoid leukemias (AML, ALL), multiple myeloma etc. It has no or weak expression in normal tissues making it a candidate for immunotherapy. PRAME can also elicit T-cell immune response in melanoma patients but there are no data concerning anti-PRAME immune response in leukemias. *Aims.* To detect specific immune response towards PRAME in patients with myeloid leukemias (AML, CML). *Methods.* Sera obtained from patients with myeloid leukemias were analyzed in enzyme-linked immunosorbent assay (ELISA) for detection anti-PRAME antibodies. *Results.* IgG PRAME antibodies were measured in 122 patients (25 AML, 97 CML) and 22 healthy volunteers. Immunoglobulin IgG PRAME antibodies were detected in 4 (16%) and 8 (8%), respectively, of 122 patients, whereas none of the healthy volunteers had IgG PRAME antibodies. In one of IgG PRAME 'positive AML samples the specific cytotoxic T-lymphocytes were founded by MHC-peptide tetramer staining with intracellular interferon-γ co-staining. *Summary*: The data demonstrate that spontaneous humoral immune responses against PRAME protein could be detected in the patients with PRAME-expressing hematopoietic malignancies.

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IS LEUKAPHERESIS ABLE TO IMPROVE SURVIVAL IN HYPERLEUKOCYTIC AML IF USED AS THE EARLY CYTOREDUCTION TREATMENT?

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Background. The management of patients with AML presenting with hyperleukocytosis remains controversial. In spite of relatively high incidence of hyperleukocytic AML (7-15%) and its very high early mortality (>40%), there is no consensus in the initial treatment for a prompt leukoreduction. *Aims.* The aim of this retrospective non-randomized study was to compare early mortality and overall survival (OS) in patients with hyperleukocytic AML initially treated with either hydroxyurea (HU) alone or HU and leukapheresis. *Patients and Methods.* From 1998 to 2005, 40 patients were treated for hyperleukocytic AML (M0=2, M1=8, M2=7, M3=2, M4=16, M5=5) in our institution. Group A consisted of 20 patients with median age of 67 years (19-78) treated by HU only (50 mg/kg/day in 3 or 4 daily doses). Group B consisted also of 20 patients with median age of 53 years (19-72) treated with HU and cytoreduction leukaphereses. The intention of the cytoreduction treatment was to decrease WBC count to at least 50x10e9/l before administration of an induction chemotherapy to prevent complications from leukostasis and tumor-lysis syndrome. Leukaphereses were performed using COBE Spectra cell separator. *Results.* The early mortality was high according to the expectations: seven patients died within two weeks in group A, as well as in group B. The patients from the group B were generally in worse condition and 4 of them died within the first 48 hours

for intracranial hemorrhage or respiratory failure (ARDS) because of leukostasis. The target cytoreduction in the group A was delayed compared to the group B, although the initial WBC count was lower (160×10⁹/L vs. 200×10⁹/L, means). In the group B, forty leukaphereses were performed in total, median 2 (1-4) per patient. Induction chemotherapies could started earlier in the group B compared to group A: on day 4 (median, range 2-12, median WBC count 30.2×10⁹/L) and on day 8 (median, range 1-14, WBC 24.0×10⁹/L), respectively. Thirty induction chemotherapies were administered in total, 14 in the group A and 16 in the group B. One patient from the group B refused chemotherapy and died of leukemia in 11 days. Complete remissions were reached in 15 patients, but only in 5 from the group A. OS was significantly longer in the leukapheresis group (p<0.05), however, we did not confirm improvement of the 2-week mortality. Median OS in the group A was 30 days and no patient survived more than 500 days. Median OS in the group B is 282 days and 6 patients are still alive from 2 to 5.7 years after the AML diagnosis. *Summary/conclusions.* Current published data do not define the impact of using leukapheresis for the cytoreduction before induction chemotherapy on survival of patient with hyperleukocytic AML. It was only proved that application of leukapheresis reduced 2-week mortality (*Giles et al. Leuk Lymphoma, 2001;42: 67-73*), but there is no evidence of its influence for improvement of survival. We can conclude that in our study a significant improvement of overall survival was reached when leukapheresis was combined with hydroxyurea treatment.

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CLEARANCE OF LEUKAEMIC BLASTS FROM PERIPHERAL BLOOD DURING STANDARD INDUCTION TREATMENT PREDICTS THE BONE MARROW RESPONSE IN ACUTE MYELOID LEUKAEMIA: A PILOT STUDY

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Background. Although several parameters (i.e. age, cytogenetics and secondariness) are useful for risk stratification of patients with acute myeloid leukaemia (AML), there are no firm criteria for predicting response to induction treatment of individual patients. *Aims.* To predict the individual response in a clinically relevant time, we analysed the clearance of peripheral blasts (PBC) in 30 AML patients during '3+7' induction course. *Methods.* By extensive flow cytometry (FC), a population of cells with leukaemia-associated aberrant immuno-phenotype (LAIP) was identified in each patient from the initial bone marrow (BM) aspirate. We then obtained LAIP-positive absolute blast counts on peripheral blood (PB) immediately before starting therapy (day 1) and every day until day 8. PBC was expressed as the ratio, converted to logarithmic scale, between baseline value (day 1) and daily absolute blasts count. At day 14, FC analysis was performed on BM in order to identify LAIP-positive residual blasts. The degree of BM clearance was expressed as the ratio, converted to logarithmic scale, between the percentage of LAIP-positive blasts determined at diagnosis and day 14 (LD14). *Results.* Between May 2004 and January 2006, 30 consecutive newly diagnosed non-M3 AML patients aged less than 66 years entered the study and were evaluable for BM response. After a single course, complete remission (CR) was achieved in 17 patients. CR was not obtained in 13 patients (NCR), 8 of whom were refractory. According to conventional criteria (cytogenetics and secondariness) there were 11 high risk patients, of whom 4 achieved CR; 14 intermediate risk patients, of whom 8 achieved CR; 5 low risk patients, all of whom achieved CR. The ranges of distribution of PBC had minimal overlap between CR and NCR groups. Since in patients who achieved CR, by day 7 or 8 blasts were often already undetectable, we excluded these time-points from analysis (Figure 1A).The medians of log reduction in the two groups were significantly different on each day (Figure 1B). The rate of PBC appeared higher in CR than NCR patients with an estimated difference between groups equal to 0.26 (95% CI:0.15-0.37; p value<0.001). This difference was not attributable to differences in baseline PB leukaemic burden and assigned risk. PBC showed an excellent correlation with BM response as assessed by morphologic analysis at haematopoietic recovery and by FC on day 14. Specifically CR was not achieved in any of 11 patients who had a PBC below 2 logs on day 5, whereas CR took place in 17 out of 19 patients who had a PBC greater than 2 logs on day 5. Higher values of PBC on each day were associated with larger LD14 (Figure 1C). This correlation was significant on each day and it increased monotonically over days. *Summary/conclusions.*