symptoms 55 and 10 days respectively ($p = 0.01$) and in median initial platelet count 200.000 and 75.000 respectively ($p = 0.016$). Repeating efforts in order to obtain diagnostic sample of BM should be tried and close observation is important if clinical symptoms and CBC are suspicious of leukemia.

P.D.014

SIGNIFICANCE OF ROUTINE BONE MARROW, CBC AND PHYSICAL EXAMINATION FOR EARLY DIAGNOSIS AND OUTCOME OF RELAPSE IN ALL

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Children with Acute Lymphoblastic Leukemia (ALL) treated according to BFM 90 and 95 in our department after remission induction are routinely evaluated as follows: Bone marrow (BM) four months (mo) from diagnosis (dx) and one mo after therapy completion, complete blood count (CBC) approximately 101 (77 during maintenance and 24 the first 4 years off therapy) and physical exam (PE) approximately 42 (18 monthly during maintenance and 24 while off therapy). Of 50 relapses documented during the study period, 24 -group A- (22 BM, 2 testicular) were diagnosed during routine evaluation (BM 6, CBC 16, PE 2). Group B included 26 symptomatic relapses (fever, echymoses, lymphadenopathy, abdominal pain, headache, vomiting, vision problems), 11 in BM, 6 in central nervous system (CNS), 3 testicular, and combined 6 (BM + CNS 3, BM + testis 3). Second complete remission (CR) was obtained in 15/24 (62.5%) of group A and in 20/26 (76.9%) of group B. Overall survival (OS) in group A was 29.2% (7/24) for 28-94 mo from relapse (med 53) in CR2 6 and in CR3 1. OS in group B was 38.5% (10/26) for 5-108 mo from relapse (med 25) all in CR2. Of 388 routine BM 6 were positive (0.015%), of almost 20.000 CBC 16 were positive (0.0008%) and of almost 8000 PE 2 were suspicious (0.00025%). From this retrospective study it is shown that routine evaluation in children with ALL may not depict relapse and therefore may not influence final outcome despite the fact that the number of relapses which we found is significant (24 versus 26).

P.D.015

THE ROLE OF CEREBROSPINAL FLUID BASIC MYELIN PROTEIN LEVELS IN PATIENTS TREATED FOR CHILDHOOD ACUTE LYMPHOBLASTIC LEUKEMIA

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Purpose. Neurotoxicity is a major concern in the treatment of ALL. Rarely leukoencephalopathy (LEP), a severe treatment-related acute demyelination, is observed. Neuroradiological imaging and cerebrospinal fluid myelin basic protein (MBP) levels are potential markers for LEP. We retrospectively analyzed CSF MBP levels in ALL patients to determine their correlation with development and severity of chemotherapy-related neurotoxicity. Methods: CSF MBP levels, charts and neuroradiological reports of ALL patients treated at our institution were reviewed. Neuroradiological findings were classified into 4 non-exclusive categories: 1/Mild LEP (localized) 2/Severe LEP (diffuse), 3/Calcifications, 4/Cerebral atrophy. Neurological symptoms were classified as 1/absent, 2/peripheral neuropathy, 3/paresis/paralysis, 4/Seizures, 5/Coma. In a subset of patients, long-term follow-up data and EEG results were analyzed. Statistical analysis was performed using non-parametric tests. Results: Ninety-eight charts were reviewed. We retrieved 1248 dosages of CSF MBP (84 patients), 381 neurologic examinations (36 patients) and 69 neuroradiological investigations (28 patients). Eighty-four patients (85.7%) had at least one MBP level done and 53 were abnormal. There was no significant association between abnormal levels and cranial irradiation($p = 0.10$), CNS disease at diagnosis($p = 0.13$) and sex($p = 0.26$). Among patients with an abnormal level, 16 had a neuroimaging study, including 8 with abnormalities described. Six had signs of LEP (2 severe and 4 mild). Seven had associated clinical symptoms and 4 had an abnormal EEG. Among the 31 patients who had normal MBP levels, 11 had neuroimaging studies, 2 showing signs of severe LEP, including one with an abnormal EEG and seizures. No significant association was found between abnormal MBP and neuroradiological($p = 0.28$) or clinical status($p = 0.8$). Conclusion: CSF MBP levels did not correlate with imaging or clinical outcome in our patients. Patients with abnormal MBP levels tend to have abnormal EEGs, but this was statistically not significant. Based on these data, we stopped routine measurement of CSF MBP in our ALL patients.

P.D.016

BIOLOGIC FEATURES AND TREATMENT OUTCOME OF PEDIATRIC ACUTE LYMPHOBLASTIC LEUKEMIA IN LEBANON

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Objectives. To organize a reference diagnostic service and characterize the clinical, biologic and treatment outcome features of children with newly diagnosed acute lymphoblastic leukemia in Lebanon.
Methods. Ninety eight children with ALL were referred for diagnosis from six institutions in Lebanon between April 2002 and February 2005. Immunophenotyping, cytogenetics and RT-PCR for t(1;19), t(9;22), t(12;21) and t(4;11) were performed.
Results. The mean age was 6.9 years. There were 1.5M/1F. Seventy nine patients (81%) had initial white blood counts $<50 \times 109$/L. Fifty patients (51%) had initial WBC $<10 \times$ 109/L. Eighty five patients (86%) had B-lineage and thirteen patients (14%) T lineage ALL. Among B-lineage patients 92% expressed CD10 and seventeen (17.5%) co-expressed myeloid antigens. Eighty patients had cytogenetic evaluation, this failed in nineteen (23%). Twenty five patients (31%) had normal karyotypes, and eleven (14%) had >50 chromosomes. Seven patients had (47–50) chromosomes. Three patients (4%) had t(1;19), five patients (6%) t(9;22). Two patients (2.5%) had t(4;11). All translocations were confirmed by RT-PCR. Molecular studies for t(12;21) were positive in thirteen (26%) of 50 patients studied, some of whom had negative or failed karyotypes. Forty one patients were treated at one institution (CCCL). Twenty six (63%), thirteen (32%), and two patients with t (9;22) (5%) had low, intermediate and high risk disease respectively. Two patients died in remission due to sepsis. All patients with informative translocations, except the two t(9;22), achieved molecular remissions.
Conclusions. A reference diagnostic service was established. Except for the low frequency of hyperdiploidy (>50 chromosomes), the presenting features and treatment outcome of ALL in our patients are similar to those of developed countries. Molecular diagnosis of t(12;21) was important in risk classification and RT-PCR studies were also useful for treatment follow up.

P.D.017

METHOTREXATE INDUCED ENCEPHALOPATHY IN ADOLESCENTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA

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Background. Survival rates for children with Acute Lymphoblastic Leukemia (ALL) were dramatically improved with the use of methotrexate for CNS chemoprophylaxis.
Objectives. Investigate the incidence and etiology of a sudden increase in MTX related encephalopathy in Omani patients with pre-B ALL >10 yeas of age.
Design/Methods. This is a retrospective clinical report of a relatively large number ($N = 7$) of older (>10 years) pediatric ALL patients who developed encephalopathy while being treated according to MRC ALL 99 protocol. (UK)
Results. In the Sultanate of Oman we began using MRC ALL-99 for ALL patients from 2000 onwards. Here we describe 7 children with ALL with intermediate risk on