Conclusion: Expression of CD20 on leukemic blasts found to be higher in our pediatric ALL patients and is associated with poorer outcome as compared to mostly reported in various studies. This should be explored further in Indian scenario with regard to prognosis.

LM-1 V1.10

PEdiatric PLASMAblastic LYMPHOMA – TEN YEARS EXPERIENCE IN A TERTIARY CARE CENTRE IN INDIA

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Introduction: Plasmablastic lymphoma is a rare form of non Hodgkin lymphoma. Little data exists on its epidemiology and outcome in children. We aimed to study the clinical, epidemiological profile and outcome of plasmablastic lymphoma in our centre.

Methods and materials: This is a retrospective analysis of 10 years data from January-2006 to December-2015 at Tata Memorial Centre, Mumbai. Analysis included all children who presented to our hospital during this period and diagnosed to have plasmablastic lymphoma by histopathology and immunohistochemistry. Patients received various multiagent chemotherapeutic regimens. The outcome of these patients was analyzed.

Results: Thirteen cases of pediatric plasmablastic lymphoma were diagnosed and treated in our center during the study period. Eleven were male and 2 female. Median age at diagnosis was 12 years (Range 1-15 years). HIV infection was detected in all except 3 children. Four patients had B symptoms at presentation. Various sites of involvement at diagnosis were lymph nodes (9 patients), paranasal sinuses (7 patients), bone (4 patients), pleura (1 patient), orbit (1 patient) and soft tissue (1 patient). Bone marrow and CSF were involved in 5 and 2 patients respectively, while 2 patients had involvement of both. Patients were given various multi agent chemotherapeutic regimens like MOPP, EPOCH and mitoxantrone-based induction protocol. At last follow up, 4 patients were disease free, 6 patients died of disease progression, 1 patient died of cause unrelated to disease and 2 patients lost to follow up (one patient HIV positive and one HIV negative).

Conclusion: Plasmablastic lymphoma is an aggressive non Hodgkin lymphoma in children. Majority of cases are HIV positive and present with disseminated disease. The most common sites of involvement include lymph nodes and paranasal sinuses. Despite intensive chemotherapy outcome is poor.

LM-1 V1.11

FEASIBILITY OF A MITOXANTRONE-BASED INDUCTION PROTOCOL IN CHILDHOOD ACUTE MYELOID LEUKEMIA: FOLLOW UP EXPERIENCE OF 2 YEAR COHORT FROM TATA MEDICAL CENTER, KOLKATA

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Background: Acute myeloid leukemia (AML) is a difficult disease to treat in resource limited settings. Data from India is limited to identify trends/shortcomings, and plan remedial strategies.

Objective: To analyze the clinical profile and outcome in children with AML treated with mitoxantrone-based induction protocol.

Method:

Study type: Retrospective observational study.

Study Setting: Undertaken between January 2014 and December 2015 in Tata Medical Center, Kolkata.

Inclusion criteria: <18-years, presenting with a diagnosis of de novo AML.

Exclusion criteria: Acute promyelocytic leukemia, Down syndrome and secondary AML.

Classification & Stratification: Genetic classification by a combination of karyotyping with G banding technique and FISH analysis for t(8;21), inv(16), t(15;17), MLL gene rearrangements in all children.

Stratified based on the WHO classification to standard, intermediate and high-risk groups.
**Intervention:** Treated with anthracycline-based induction (mitoxantrone 12 mg/m²/day x 3 doses + cytarabine 100 mg/m²/ dose 12 hrly d1 to d10, daunorubicin 50 mg/m²/day x 3 doses + cytarabine), followed by consolidation with 2 cycles of high-dose (3g/m²) cytarabine. Stem cell transplantation was not performed.

**Analysis:** Data extracted from the medical records. Patient identity was masked. Kaplan-Meier method was used for survival analysis.

**Outcome:**

i. Proportion of cases achieving remission

ii. Event free survival (EFS)

**Result:** Of the 39 children presenting to the centre, 27 (69.2%) received treatment. Twenty-five (92.5%) received mitoxantrone in induction. Median age was 11.1 years (range: 10.8-17.1) with a slight female preponderance (F:M = 1:2.1). Median follow-up was 16 months (range: 5-23). Most common reason for treatment-refusal was financial constraint. The major presenting complaints included fever (100%) patients and bleeding manifestations (66.7%). Rare presentations include paraparesis (epidural mass on MRI), bilateral ptosis (one case). No patient had CNS disease. WBC count was 13,600 (range: 600-3,560,000). Hyperleucocytosis was documented in 3 patients (11%). The most frequent genetic abnormality was t(8;21), 22.2% had a normal karyotype. Patients in standard (SR), intermediate (IR), and high-risk (HR) groups were 10 (31.7%), 11 (40.7%) and 6 (22.2%), respectively. Complete remission was achieved in 76.9% after induction-1, and 80.8% (66.7%). Rare presentations include paraparesis (epidural mass on MRI), bilateral ptosis (one case). No patient had CNS disease. WBC count was 13,600 (range: 600-3,560,000). Hyperleucocytosis was documented in 3 patients (11%). The most frequent genetic abnormality was t(8;21), 22.2% had a normal karyotype. Patients in standard (SR), intermediate (IR), and high-risk (HR) groups were 10 (31.7%), 11 (40.7%) and 6 (22.2%), respectively. Complete remission was achieved in 76.9% after induction-1, and 80.8% after induction-2. Two (7.4%) children had refractory disease. Both had received daunorubicin-based induction. Other events included 6 non relapse deaths (22.5%). Of these 5 were toxicity-related deaths (18.5%, 2 deaths in CR), and 1 death due to intracranial bleed (3.5%). 5 patients relapsed (18.5%). Event free survival (EFS) at 2.5 years was 52 %. EFS of SR, IR, HR group was 80%, 45.5% and 16.7% respectively. Commonest cause of non-relapse mortality was multidrug-resistant sepsis (5/9 deaths), with Klebsiella pneumoniae (n = 1).

**Conclusion:** Complete remission and relapse rates were comparable to that reported from developed countries; however, these were partly offset by higher toxicity-related deaths. Favourable outcome was noted in the standard-risk group. Feasibility of a mitoxantrone-based induction protocol was demonstrated, and plausibly contributed to the favourable outcome. Support for equitable access to healthcare, conformity to a standard protocol, and optimization of supportive care, would help us further improve outcomes.


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**Background/Objectives:** Chromosomal abnormalities, such as t(9;22) (q34;q11) (ABL/BCR), t(12;21) (p13;q22) (TEL-AML1), and t(11;q23) (MLL) are independent prognostic indicators in childhood acute lymphoblastic leukemia resulting in risk adapted therapy. Accurate and rapid detection of these abnormalities is mandatory, which is achieved by karyotyping, fluorescence in situ hybridization (FISH), and real time quantitative reverse transcriptase polymerase chain reaction (RT-PCR). Risk stratification helps in improving the survival rates and the lack of adequate and appropriate diagnostic facilities in developing countries are identified as one of the causes of low survival rates.

**Design/Methods:** The aim of the study was to identify the incidence of common fusion oncogenes of childhood acute lymphoblastic leukemia and to assess the sensitivity and specificity of the tests used to identify the fusion oncogenes. The study was conducted on 35 patients being treated for ALL in our institution. Diagnostic tests of karyotyping, FISH and RT-PCR were performed according accepted protocols and standards. Study was approved by institution ethics committee and funded by GATE project of SRU.

**Results:** The frequency of t(9;22) (q34;q11) (BCR/ABL), t(12;21) (p13;q22) (TEL-AML1), and t(11;q23) (MLL) was found to be 3%, 6% and 2% respectively. The adopted diagnostic techniques had a high-individual diagnostic accuracy in detecting the above-mentioned chromosomal translocations. However, the sensitivity of karyotyping for detecting the TEL-AML1 fusion gene and MLL-rearrangements was low.

**Conclusion:** Despite the high-diagnostic accuracy, all diagnostic techniques should be used complementary, because any detection of a significant chromosomal aberration irrespective of diagnostic mode has to be considered in therapy. However, a larger study population would establish the diagnostic accuracy of the three techniques as well as the frequency of these genetic alterations in children with ALL.

**References**


**LM-1. V1.13 SOCIO-ECONOMIC STATUS AND SURVIVAL IN CHILDREN WITH ACUTE LYMPHOBластIC LEUKEMIA**

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**Background:** Survival in malignancies in low income countries is poor in comparison to high income countries, reasons ranging from lack of adequate care, malnutrition, higher proportion with adverse prognostic factors, abandonment and high incidence of toxic deaths.

**Aim:** To analyze the effect, if any, of socioeconomic (SE) status and parental educational status on outcome in childhood acute lymphoblastic leukemia (ALL).

**Methods:** Children who were diagnosed and treated for ALL from January 2010 to December 2012 were included in this retrospective analysis. Patients were treated as per modified UKALL-2003 protocol. Details of parental education, occupation and income were noted from the database maintained by the social worker. Modified Kuppuswamy scale (KS) was used to classify patients into upper, middle and lower SE strata. Educational status of parents was classified as per the criteria provided in KS. Induction failure, death and relapse were included as events for Kaplan-Meier survival analysis.

**Results:** The study included 308 patients with median age of 5 years (range: 1-13). Male to female ratio was 2.5:1. Patients belonging to upper, middle and lower SE strata numbered 85 (28%), 68 (22%) and 153 (50%) respectively. Fathers and mothers were graduates in 75 (24%) and 62 (20%) children. Fathers and mothers were graduates in 75 (24%) and 62 (20%) children. Fathers and mothers had at least high school education in 193 (63%) and 175 (57%) patients. Fathers of girls received treatment for ALL were more likely to have passed high school as compared to boys [72% vs. 59%, p = 0.026]. Maternal educational status as well as SE status did not differ with gender. Sixteen patients (5.2%) abandoned treatment. None of the patients whose mothers were graduates abandoned treatment (p = 0.025).

**Conclusion:** Treatment abandonment did not differ significantly between the 3 SE strata (p = 0.340). Fifty-eight (19%) patients died due to neutropenic sepsis during treatment. Twenty-seven (8.8%) patients died during induction. Induction mortality did not differ with SE status (p = 0.334), paternal (p = 0.300) or maternal educational status (p = 0.100). Neutropenic sepsis related deaths occurred in 19 patients during maintenance therapy. Death during maintenance therapy was significantly lower in families where the mother was educated up to high school in comparison to lesser educated mothers (p = 0.03). Event-free-survival (EFS) was 58.1±3.1% and overall survival (OS) was 74.8±2.7% for the entire cohort. In patients who survived induction therapy, the EFS of upper SE stratum was significantly better: 78.7±4.9% vs. 59.7±2.2 and 58.1±4.6% in middle and lower strata (p = 0.026, Fig. 1). OS, though statistically not significant, was higher in the higher SE group; being 91.2±3.5%, 78.3±5.6% and 78.8±3.9% (p = 0.085) respectively in the 3 strata.

**Conclusions:** Higher socioeconomic status contributes to superior EFS in children with ALL who achieve remission. It is noteworthy that girls receiving treatment ALL are more likely to have educated fathers. Additionally, maternal educational is significantly associated with reduction in treatment abandonment and death during maintenance therapy.