chemotherapy for ALL according to the Modified BFM ALL 95 protocol at our institute, from January 1st 2015 to December 31st 2015. Hyperglycemia was diagnosed with a random blood sugar (RBS) level of ≥200mg/dl or a fasting blood sugar (FBS) value of ≥126mg/dl. Patients with pre-existing diabetes were excluded from analysis.
Results: 165 children with newly diagnosed ALL were analysed of which eight patients (4.8%) were detected to have hyperglycemia (Range 139 – 646mg/dl). Seven of the patients were females and 50% of them were ≥10 years of age. No patient had pre-existing diabetes. Five patients (62.5%) required insulin along with metformin to attain adequate glucose control while two patients were treated with metformin alone. One of the patients developed hyperglycemia with an RBS of 264 while on treatment for septic shock and expired shortly after. One child presented with ketoacidosis associated with blood sugar of 554mg/dl and also had pancreatitis. Two children had a family history of diabetes mellitus.
Conclusion: The occurrence of hyperglycemia in our study was lower than previously reported in literature. The incidence of hyperglycemia was significantly increased in female children ≥ 10 years of age (p=0.002).

LM-1_V1.6
PROFILE OF ACUTE LYMPHOBLASTIC LEUKEMIA IN CHILDREN UPTO 2 YEARS OF AGE – STUDY FROM A TERTIARY CANCER CENTRE FROM SOUTH INDIA, BANGALORE

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Introduction: Acute Lymphoblastic Leukemia is hallmarked by heterogeneous characteristics and treatment responsiveness in different subtypes. Although, the overall cure rate of ALL has improved significantly over the past few decades, cure rates for specific ALL subgroups vary significantly. Age at diagnosis is identified as an important prognostic marker of pediatric ALL. This study aims at analyzing clinical, hematological, biochemical, immunophenotypical parameters and treatment responsiveness in children upto two years of age, who are diagnosed with ALL.
Materials & methods: It is a retrospective data analysis conducted at a Tertiary Care Cancer Centre in South India. The study population includes all Pediatric ALL upto 2 years of age, registered at this institute during January 2009 to December 2013. The details included in the study were collected from case records, hospital cancer registry and during follow up and percentages were calculated for the variables using appropriate statistical tools.
Results: The total number of pediatric malignancies registered during the period were 2640, out of which 422 cases were under 2 years of age with ALL contributing 122 cases (29%).Among them, 48 children refused treatment due to various reasons and four were lost to follow up. Thus, 70 children are eligible for analysis.
Among 70 children, infants were 13 (18%) and the remaining 57 children (82%) were in the 1-2 years group. There were 39 males (56%) and 31 females (44%), the ratio being 1.25:1. Fever was present in 62 children (88%), and pallor in 57 (81%). Hepatosplenomegaly was observed in 59 children (84%) and isolated hepatomegaly in 9 (14%). Lymphadenopathy was noted in 52 (74%).Bleeding manifestations were present in 9 (11.5%) and parotidomegaly in 3 (4.25%).
Hemogram revealed hemoglobin <7gm/dL in 25 children (35%), 7-11 gm/dL in 35 (50%) and >11 in 10 (15%).Initial WBC count was < 10,000 in 25 children (36%), another 36% had counts between 10,000- 49,000 and the remaining 20 (28%) had more than 50000.Platelet count was <20,000 in 14 children (20%), 20,000-99,000 in 51 (74%) and >1 lakh in 6%.
Serum LDH was elevated (>250 IU) in 45 children (64%) and Uric acid in 8 (11.5%).Renomegaly was detected by ultrasound in 12 (17%).Only one child had CNS 3 disease.L1 morphology was seen in 66 children (94%) and L2 in 4 (6%). Immunophenotype was done in 44 children, 41 (93%) were Precursor B ALL and 3 (7%) Precursor T ALL.
Event Free Survival was 63%. Among 26 children who succumbed (37%), three died before the commencement of chemotherapy (4.3%), 6 children died during induction (8.5%) and 17 (24.2%) died after relapse. Four out of 11 infants (36%) and 40 among 1-2 years group (70%) survived.
Conclusion: Commonest clinical features were fever, hepatosplenomegaly and pallor. Predominant morphology was L1 and immunophenotype, Precursor B ALL. Treatment of infantile ALL is a challenge and is associated with significantly lower survival as compared to 1-2 years group.

LM-1_V1.7
NODULAR LYMPHOCYTE PREDOMINANT HODGKIN'S LYMPHOMA (NLPHL): EARLY OUTCOMES

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Purpose: To evaluate treatment response, patterns of failure and prognostic factors for patients with NLPHL treated at the Tata Memorial Hospital (TMH).
Materials and Methods: Between January 2008 & July 2013, 62 patients with histologically proven NLPHL in the age group of 6-70yrs (Median 30.6Yrs) were treated at TMH. Forty five (73%) were males. Majority had Stage I (48%) & Stage II (24%) disease. Fifteen (24%) had bulky disease at presentation. Sixteen (26%) were treated with Involved Field Radiation Therapy (IFRT) alone, 18 (29%) received Chemotherapy (CTh) alone, while 23 (39%) received a combination of CTh followed by IFRT. Five patients underwent surgery as the local treatment. The IFRT doses were in the range of 20-36 Gy. Thirty-four (80%) patients received ABVD CTh. Five (8%) patients received Rituximab. Primary MINE CTh was used for 4 (6%) patients.
Results: After a median follow-up of 18 months, the 2 year disease free survival (DFS) and overall survival (OS) were 86% and 98% respectively. Complete response (CR) at completion of primary treatment was 94%. At last follow up 55 (89%) were alive without disease. Two (3%) patients each had in-field, out of field and disseminated relapse. Four (6%) had residual disease and one (2%) had transformation to DLBCL. Six (55%) patients received salvage treatment (3 IFRT, 3 CTh), of which 4 were disease free at last FU. On univariate analysis, early stage, absence of B symptoms and use of IFRT resulted in superior DFS. For patients with early stage disease (stage I and II), there was no difference in DFS (94%) between patients receiving IFRT alone and CTh + IFRT. The use of IFRT was associated with improved DFS (91% vs. 78%, p=0.57). All patients tolerated treatment well without any grade III or IV toxicities.
Conclusion: NLPHL is associated with excellent overall survival. For patients with early stage disease, IFRT alone results in similar outcomes compared to CTh+IFRT. Early Stage at presentation, absence of B symptoms and the use of IFRT confers superior outcome.

LM-1_V1.8
CLINICAL PRESENTATION & OUTCOME OF PAEDIATRIC PHILADELPHIA-POSITIVE ACUTE LYMPHOBLASTIC LEUKAEMIA (PH +VE ALL) USING AGGRESSIVE CHEMOTHERAPY WITH IMATINIB IN INDIA

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Introduction: Ph +ve ALL is a very high-risk subset of childhood ALL with historically poor outcomes without stem cell transplantation (SCT) before the advent and use of Imatinib Mesylate. The incidence of Ph +ve ALL at our centre is higher at 7% as compared to 2-3% in the west. There is a paucity of data on the clinical presentation outcomes of Ph+ve ALL in India, where SCT is not affordable for most patients.
Aim: We conducted a retrospective analysis of paediatric Ph +ve ALL patients treated with intensive chemotherapy with or without Imatinib.

Materials and methods: We audited records of Ph +ve ALL paediatric patients diagnosed between January 2005-December 2014 who underwent treatment with institutional ALL protocol (MCP-841) with or without Imatinib. No patient underwent SCT. EFS was calculated from date of diagnosis to date of relapse/progression while OS was calculated from date of diagnosis to date of last follow up.
Results: A total of 104 patients were diagnosed with Ph+ ALL. The median age 11 years vs 7.9 years, Male:Female ratio of 4:1 vs 2:1 and median WBC count 88,000 cells/mm3 vs 40,514 cells/mm3 was higher compared to west. Similarly CNS involvement: 4 were CNS II (5%) and15 were CNS III (20%) was higher compared to 6% in west. Also, 86% children had NCI high-risk disease compared to 60% in west. Of 94 patients who started therapy at our centre, 72 patients received Imatinib during their treatment: 29 during induction and 43 post-induction. Fourteen did not receive Imatinib and 8 abandoned therapy before response evaluation. Median overall survival (OS) of the entire cohort was 18 months and estimated 5-year OS and EFS was 29% and 23% respectively. OS for patients who received Imatinib at any time during therapy was 38%. However, none of the patients who did not get Imatinib survived for 3 years. Five-year EFS in patients who received Imatinib in induction was significantly worse at 23% compared to 34% for those who started it post-induction (p=0.03). However, there was no statistical difference in toxic deaths and morphologic remissions between the groups. The 5-year overall survival of NCI low-risk group 57% compared to 24% in NCI-high risk group.
Conclusion: Ph+ ALL is more common in India and presents with higher age and white cell count, as well as high prevalence of CNS involvement and NCI high-risk disease. Outcome of Ph+ALL without Imatinib and stem cell transplantation is dismal. Combined therapy including aggressive chemotherapy and Imatinib improves outcome but outcome of NCI-High risk disease is suboptimal.
Keywords: Philadelphia-Positive Acute Lymphoblastic Leukemia, Imatinib, Children

LM-1_V1.9
EXPRESSION OF B LYMPHOCYTE ANTIGEN IN PEDIATRIC B-CELL PRECURSOR ACUTE LYMPHOBLASTIC LEUKEMIA: AIIMS EXPERIENCE

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Background: Majority of mature B-ALL blasts express B lymphocyte antigen (CD20) on their surface however, only 30- 50% of B-cell precursor ALL blasts express CD20. The incongruous expression of CD20 in BCP-ALL patients and its prognostic relevance has been reported in adult and pediatric cases but with discrepant results. In view of this we aimed to determine the prognostic impact of CD20 expression in pediatric BCP-ALL patients treated at our department.
Aim of the study: To investigate and correlate the expression profile of CD20 in precursor B-cell ALL patients with treatment outcome.
Methodology: Mononuclear cells were isolated using ficoll-histopaque layering technique from bone marrow (BM)/peripheral blood (PB) samples. Immunophenotyping of blast cells at diagnosis was done by multiparametric flow cytometry. Expression of antigens on leukemic cells was determined by using a 6-dimensional space formed by 2 light scatter parameters (forward scatter [FSC] and side scatter [SSC]) and 4 fluorescence-associated characteristics. The existence of blast cell population was established on the basis of abnormal antigen expression profiles of the blasts as compared to the control.
Results: A total of 65 pediatric patients (median age 9 yrs, range 1-17 yrs; M: F 4:1; median TLC-17.4x10^9/l, range 1.1-715x10^9/l) were studied. CD20 positivity was defined as more than 20% of leukemia blasts expressing surface CD20. Expression of CD20 was present in 37/65 (57%) patients with BCP ALL. A worse outcome has been observed in our patients expressing CD20 than those without the expression. Disease free survival at 20 months in CD20-positive and CD20-negative groups (33% [95% CI, 10-54] versus 89% [95% CI, 54-96], P=0.002) was statistically significant. Overall survival at 18 months (46% [95% CI, 26-61] versus 65% [95% CI, 40-78], P=0.01) was also poorer in CD20-positive group than CD20-negative group.
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 (Range1-15 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 MCP-842, CVEP (Cyclophosphamide, Vincrstine, Etoposide, Prednisolone), EPOCH (Etoposide, Prednisolone, Vincristine, Cyclophosphamide, Adriamycin) and oral metronomic chemotherapy (6-Thioguanine, Etoposide). All patients with HIV infection also received antiretroviral therapy. 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.