DISCUSSION

Acute Megakaryoblastic Leukemia (AMKL) comprises between 3-10% of childhood AML cases.[1] Alhough initially thought to be rare among children, AMKL has been diagnosed with increasing frequency in this age group, largely because of improvements in immunophenotyping. AMKL is defined as an AML with >20% blasts, of which 50% or more are of the megakaryocyte lineage. Immunophenotyping reveals megakaryoblast expression of one or more platelet glycoproteins: **CD41** (glycoprotein IIb/IIIa) and/or **CD61** (glycoprotein IIIa). Myeloid markers **CD13** and **CD33** may be positive; **CD36** is typically positive. Blasts are negative with the **anti-MPO** antibody and other markers of myeloid differentiation.Lymphoid markers and tdt are not expressed but there may be abberant expression of CD7.[2] Since megakaryoblasts may resemble hematogones, lymphoblasts, non-granular myeloblasts, or metastatic tumors and do not react with a specific cytochemical stain, it is often necessary to perform immunophenotypic and/or ultrastructural studies to be able to assign their megakaryocytic lineage.

AMKL in children is divided into two major subgroups: AMKL in patients with Down syndrome (DS-AMKL) and AMKL in patients without Down syndrome (non-DS-AMKL). AMKL is the most frequent type of AML in children with Down syndrome, and the incidence in these patients is 500-fold higher than in the general population. Somatic mutations in *GATA1* are found in almost all cases of DS-AMKL and precede the development of leukemia, as indicated by their presence in patients with transient myeloproliferative disease (TMD) in the neonatal period. Pediatric non-DS-AMKL is a heterogeneous group of patients, a significant proportion of which carry chimeric oncogenes including *RBM15-MKL1, CBFA2T3-GLIS2, NUP98-KDM5A*, and *MLL* gene rearrangements.

AMKL has also been associated with mediastinal germ cell tumors in young adult males. Hepatosplenomegaly is rare in adults but frequently observed in children, particularly in association with t(1;22). This translocation has distinctive clinicopathologic features including onset in infancy and extensive bone marrow fibrosis with clustering of leukemic blasts mimicking metastatic tumors.

PROGNOSIS

AECOG series reported an inferior disease free survival in M7 AML compared to non M7 AML, and found M7 AML to be an independent adverse prognostic factor for DFS[4]. However complete remission and long term survival are common in children with AML M7 specially in children with Down syndrome.[5,6]