Conventional and molecular cytogenetics in pediatric B-lineage acute lymphoblastic leukemia

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Abstract
Leukemia’s constitute approximately one-third of all malignancies in children (age 0 to 14 years. Of these, acute lymphoblastic leukemia (ALL) is the most prominent type. The World Health Organization (WHO) classifies ALL as either "B lymphoblastic leukemia" or "T lymphoblastic leukemia." B lymphoblastic leukemia is subdivided by the presence or absence of specific recurrent genetic abnormalities. These translocations characteristic of childhood B lineage leukemias are t(12;21)[TEL-AML1], t(9;22)[BCR-ABL], rearrangements in the MIL gene on chromosome 11, band q23, hyperdiploid karyotype (i.e., > 50 chromosomes), or a hypodiploid karyotype (i.e., < 46 chromosomes). The most common translocation in pediatric B-cell precursor (BCP-ALL) is t (12;21) (p13;q22) which results in the formation of the ETV6-RUNX1 (TEL-AML1) fusion gene. The first translocation mentioned is an independent prognostic indicator for good prognosis, whereas the last 2 anomalies are linked with a poor prognosis in childhood ALL. In our centre, we perform conventional cytogenetic and Fluorescence in situ hybridization (FISH) for all panels on all patients of Childhood BCP-ALL.

Results of Bone marrow cytogenetics and Floroscence in Situ Hybridisation (FISH) on these BCP-ALL patients will be reviewed and compared with the existing literature from different parts of the world.