

ONCODAILY MEDICAL JOURNAL

abstract

Molecular Profile of Pediatric Acute Lymphoblastic Leukemia: A retrospective study from Tertiary Care Centre of Kashmir


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DOI: [10.69690/ODMJ-018-0425-647](https://doi.org/10.69690/ODMJ-018-0425-647)



SIOF Asia, 2025, Saudi Arabia

abstract



Molecular Profile of Pediatric Acute Lymphoblastic Leukemia: A retrospective study from Tertiary Care Centre of Kashmir

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Introduction: Acute lymphoblastic leukemia (ALL) is the most common type of neoplastic disorder diagnosed in childhood. It accounts for 25% of all childhood cancers and approximately 75% of all cases of childhood leukemia. Immunophenotypes, cytogenetics and molecular profile of ALL are documented prognostic factors. Objective is to study the immunophenotype, cytogenetics and molecular profile of pediatric patients with ALL.

Methodology: This retrospective study was conducted in the department of Medical Oncology, Sher I Kashmir Institute of Medical Science, Srinagar, Jammu and Kashmir, based on the details of all the newly diagnosed cases of ALL in children aged between 0 – 18 years from 1st June 2016 to 30th November 2023.

Results: Total of 232 patients were diagnosed with ALL during the time period. Mean age was 8 yrs with male to female ratio of 1.4:1. Immunophenotypically Pre B ALL, B ALL, T ALL were 78.5%, 6.5%, 15% respectively. Cytogenetics were done

were done on 75% patients with normal, hyperdiploidy, hypodiploidy as 71%, 3%, 6% respectively. Mutation analysis revealed TEL-AML, BCR-ABL, MLL gene positivity in 15% (n=36), 7.8% (n=18), 3.9% (n=9) patients respectively. EFS of Pre B ALL, B ALL, T ALL were 95 months, 92 months, 91 months respectively. EFS for normal cytogenetics, hyperdiploidy, and hypodiploidy were 96 months, 97 months, 90 months ($p=0.5$) respectively. EFS for TEL-AML positive Vs negative was 85 Vs 97 months, BCR-ABL positive vs negative was 82 Vs 97 months, MLL positive Vs negative was 30 Vs 98 months which were statistically significant.

Conclusion: Our study found that mutation profiles bear significant prognostic impact but not the immunophenotype or the cytogenetics.

benefits of standardized care, it highlights the need for ongoing adaptations and multicentric collaborations to meet the global standards in terms of survival in childhood ALL in resource-constrained settings.