HEMATO-ONCOLOGY

CHILDHOOD ACUTE LYMPHOBLASTIC LEUKEMIA - AN UPDATE

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Abstract: *Acute lymphoblastic leukemia (ALL) comprises 75% to 80% of all childhood leukemias. ALL occurs commonly between 2 and 5 years of age with 80-85% being of B-lineage, T-lineage accounting for 10-15% and around 5% being uncommon variants. An improved understanding of the biological heterogeneity of the disease has led to marked improvement in outcome, with current 5-year event-free survival (EFS) being 85% and overall survival (OS) rates being around 90%.*

A diagnosis of leukemia is confirmed by doing a bone marrow examination which ideally includes morphology, flowcytometry, cytogenetics and molecular genetics. Current day therapy is dependent on the risk assessment and the response of the disease to therapy. Precursor B ALL is stratified into standard, intermediate and high risk disease with minimal residual disease assessment at the end of Induction therapy being the most important indicator of prognosis. T-ALL is treated with a protocol similar to HR ALL. Combination chemotherapy consisting of drugs acting at different phases of the cell cycle is the cornerstone of therapy. Treatment broadly consists of 4 phases: Induction, consolidation, delayed intensification or re-induction and maintenance therapy.

A hematopoietic stem cell transplant is required in very few with contemporary treatment. Targeted therapy/ immunotherapy are the newer approaches for refractory/ relapsed leukemias. Supportive care which includes treatment and prophylaxis for infections, transfusion support, nutritional support and psychological support are vital to the management of disease.

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Points to Remember

- ***Childhood ALL has a good prognosis.***
- ***B-lineage ALL constitutes around 80% and T lineage around 15% cases, 5% being mixed lineage/others.***
- ***Childhood ALL management is risk (clinical/ cytogenetic/molecular analysis) and response (prednisolone response/minimal residual disease) based, indicating the need for adequate cytogenetic and molecular analysis at diagnosis.***
- ***Children who are low risk can be treated with less intensive therapy, while high risk children require intensive therapy.***
- ***Ph-like ALL is a major missed entity among B-other-ALLs, with scope for their identification by molecular diagnostics.***
- ***HSCT is needed in very few children as upfront therapy in the management of childhood ALL.***
- ***Supportive care is important and it includes infection control, transfusions and good nutrition.***
- ***Precision medicine in the future will include immunotherapy and pharmacogenomics of anti-metabolites to improve survival in the small percentage who still relapse and to decrease treatment related morbidity.***

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