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50 Years Ago in *THE JOURNAL OF PEDIATRICS*

From Toxicity to Specificity, an Overview on Acute Lymphocytic Leukemia Treatment

Pinkel D. Treatment of childhood acute lymphocytic leukemia. *J Pediatr* 1970;77:1089-91.

Acute lymphoblastic leukemia (ALL) is the most common malignancy in childhood and the most curable disease in pediatric oncology. In the 1960s, ALL was an almost uniformly fatal disease, but due to new therapies and breakthroughs in the last 50 years, the current 5-year survival rate has improved to 89% in children and 61% in young adults.¹

The essence of ALL treatment remains the same and continues to be grouped in the following phases: induction, consolidation, and a prolonged maintenance. One of the most significant changes is the individualization of each patient, classifying them according to risk stratification, predictive biomarkers, molecular prognosis, and monitoring of minimal residual disease, aiming to reduce complications and mortality of chemotherapy itself. Another major shift includes central nervous system prophylaxis, an essential part of ALL management and a prerequisite for successful treatment.²

Fifty years ago, “complete remission” was based on Bisel morphologic criteria, which Pinkel considered insufficient, as it excluded central nervous system involvement. Today, analytic minimal residual disease testing using flow cytometry is a strong prognostic indicator in all leukemia subtypes.³

The last decade has seen significant advances in treatment; thanks to molecular biology, Paul Ehrlich’s “magic bullet” concept is reaching its full realization. Today, we are in the era of monoclonal antibody therapy with new drugs such as blinatumomab, inotuzumab, and chimeric antigen receptor T cells, which target specific abnormal molecules and pathways of cancer cells.²

These new therapies came with new complications and adverse effects, so the imperative to improve supportive care, comfort, and quality of life remains. However, they pave the way to a future in which treatment toxicity for patients is minimized. The challenges of 50 years ago are being today addressed with the goal to completely phase out conventional chemotherapy.

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