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The role of minimal residual disease in completing post induction phase remission status in acute lymphoblastic leukemia B cell

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Introduction: Minimal residual disease (MRD) is the most powerful predictor of outcome in acute leukemia and is useful in therapeutic stratification for acute lymphoblastic leukemia (ALL) protocols. It's the most reliable methods for studying MRD in ALL are multiparametric flow cytometry. It provides a MRD level of 0.01% of normal cells, that is, detection of one leukemic cell in up to 10.000 normal nucleated cells. Evaluation after induction phase is the most informative time to predict danger of relapse according to the appropriate methodology employed for MRD.

Methods: A cross sectional study was conducted at Pediatric Hematology Oncology Department Dharmais Hospital; Women and Children Harapan Kita Hospital; Pediatric Hematology-Oncology Division Kramat 128 Hospital; on February-June 2017. Bone marrow aspiration and MRD detection performed after induction phase to evaluate remission.

Results: A total of 52 diagnosed ALL patients enrolled in this study and performed National protocol of ALL. The mean age was 6.4 years. Incidence in male (62%) is higher than female (38%). All patients are B-lineage. Standard risk (SR) patients (46%) is less than high risk (HR) patients (54%). Morphological remission and negative MRD was slightly higher (51.9%) than positive MRD (42.3%). Minimal residual disease <0.01% and morphological remission is higher (51.9%) than >0.01% (42.3%) and morphological remission. Standard risk stratification with quantitative minimal residual disease <0.01% (28.9%) is slightly higher than HR stratification (23.1%). Negative MRD in SR stratification (28.9%) is higher than positive MRD (17.3%).

Conclusions: It is necessary to evaluate data on MRD as a prognostic factor in ALL for each therapeutic regimen, considering the differences in the intensity of treatment protocols, favorable times for evaluation and methodological differences among the assays. It is recommended that MRD cutoffs for therapeutic decision are defined within each treatment protocol for ALL.

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