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612.ACUTE LYMPHOBLASTIC LEUKEMIAS: CLINICAL AND EPIDEMIOLOGICAL

The Kinetics of FLT3L during Induction Chemotherapy for Pediatric Acute Lymphoblastic Leukemia Suggests a Novel Clinical Diagnostic and Treatment Strategy

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Acute lymphoblastic leukemia (ALL), one of the most common malignancies, has been reported to account for nearly one-third of all pediatric cancers. Failure of induction chemotherapy is the leading cause of relapse and mortality in pediatric patients treated for ALL. Monitoring the therapeutic efficacy of induction chemotherapy and improving its success rate are critical to the clinical management of ALL. FMS-like tyrosine kinase 3 (FLT3) is a receptor tyrosine kinase that is expressed on progenitor cells and ALL blasts. FLT3 ligand (FLT3L) is detectable during homeostasis and increases in hypoplasia due to genetic defects or treatment with cytoreductive agents. Here, we continuously monitored changes in FLT3L levels during induction chemotherapy in children with ALL to provide a more sensitive assessment of MRD, similar to NGS. The study included 54 children with ALL whose peripheral blood FLT3L levels were measured by ELISA weekly during induction chemotherapy. Weekly sampling revealed a significant difference in the kinetics of FLT3L response between children in complete remission (CR) and partial remission (PR), at day 14 of treatment (CR: 519 ± 10 pg/ml vs PR: 54 ± 10 pg/ml, $P < 0.001$). Furthermore, the achievement of CR in these patients was associated with higher FLT3L (150 ± 10 pg/ml vs 32 ± 10 pg/ml, $P < 0.05$) at day 28. Clinical prediction models show that combining minimal residual disease (MRD) status with FLT3L measurements better predicts whether patients will achieve CR after induction chemotherapy. Moreover, FLT3L levels were positively correlated with DC and T cells and negatively correlated with WBC, PLT and LDH during induction chemotherapy in children with ALL. Therefore, we hypothesized that higher levels of FLT3L might improve antitumor immunity by activating DC and T cells. However, further research is needed. In conclusion, measurement of FLT3L in children with ALL during induction may provide added value in assessing early treatment response to chemotherapy, the impact on long term outcome needs further study.

Disclosures No relevant conflicts of interest to declare.

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