

Changes in expression of miR-128, miR-144-3p, miR-181b, and miR-451 in response to treatment of pediatric acute lymphoblastic leukemia (B-ALL)

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Abstract:

Background: Acute lymphoblastic leukemia (ALL) is the most common leukemia in children. Changes in the expression of microRNAs occur in ALL. The purpose of this study was to investigate the importance of miR-128, miR-144-3p, miR-181b, and miR-451 in diagnosis and response to treatment in children with B-ALL.

Methods: In this study, serum samples were collected from 12 children with B-ALL at diagnosis, as well as 12 healthy individuals as a control group. All patients received chemotherapy and after treatment entered in this study, and the expression of miR-128, miR-144-3p, miR-181b, and miR-451 was evaluated after and before treatment of patients.

Finding: miR-144 was significantly downregulated in newly diagnosed patients with ALL compared to control groups (0.26-fold, $P = 0.020$), and also the expression of miR-144-3P significantly increased after treatment in comparison to before it (4-fold, $P < 0.001$). In addition, miR-128 (0.11, $P = 0.006$), and mir-181b (0.34-fold, $P = 0.040$) expression significantly decreased after treatment compared to newly diagnosed patients.

Conclusion: The reduced expression of miR-144-3p can be served as diagnostic biomarker, and upregulation of miR-144-3p can predict treatment response in patients with ALL. Moreover, the abnormally reduced expression of miR-128 and miR-181b after the treatment of patients, indicate that these microRNAs can be candidate as therapeutic biomarker in pediatric ALL.

Keywords: Precursor Cell Lymphoblastic Leukemia-Lymphoma, MicroRNAs, Child, Biomarkers