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Screening of prognostic factors using multiplex RT-PCR technique on different leukemic cell lines

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Abstract:

Background: Leukemia is one of the most common pediatric malignancies. T-cell Acute Lymphoblastic Leukemia (T-ALL) accounts for 15% of hematopoietic cancers. It has been well understood that identification of genetic alterations associated with leukemias is very critical. The molecular genetic techniques have promoted the identification of leukemia-associated genetic changes that may characterize the most accurate predictors of clinical outcome. These considerations reinforce the requirement for rapid identification of the abnormalities.

Methods: Multiplex RT-PCR, a highly sensitive and specific method applied to screen simultaneously three most frequent transcription factors, *TLX1/HOX11*, *TLX3/HOX11L2* and *TAL1/SCL* which are associated with T-cell Acute Lymphoblastic Leukemia (T-ALL).

Results: We describe here our efforts to establish a multiplex RT-PCR analysis system that facilitates the detection of HPB-ALL and K562 cell lines, respectively.

Conclusion: The multiplex RT-PCR technique is a sensitive, valuable and cost-effective diagnostic tool which could improve our ability to accurately and rapidly risk-stratification of patients with childhood T-ALL. In order to perform multiplex RT-PCR technique researchers do not need bone marrow samples and they can employ this method using peripheral blood samples. Therefore, the status of treatment could be followed by assessment of the level of mRNA expression of oncogenic transcriptional factor using peripheral blood sample. Use of this procedure not only provides the best results in short term for specialist, but also clinicians could have opportunities to choose suitable treatment strategies with decrement of drug side effects.

Keywords:

Multiplex RT-PCR , T-ALL , oncogene , leukemia , cell

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