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The dichotomous role of (TET1) Ten-Eleven Translocation 1 Gene in Acute lymphoblastic leukaemia

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INTRODUCTION

The Ten-Eleven Translocation 1 gene (TET1) is a member of the TET methyl cytosine dioxygenase family of enzymes (TET1, TET2, and TET3). TET1 has a role in several physiological and pathological processes. It is an epigenetic regulator of the DNA and RNA demethylation processes. Hence, it regulates gene expression at both the transcriptional and post-transcriptional levels.

AIM

We studied the expression of the TET1 gene in ALL patients and its correlation with clinical and pathological criteria.

METHOD

This study was done on 36 newly diagnosed ALL patients; (28 B-ALL, and 8 T-ALL) of which B.M samples were analysed using Real-Time PCR 7500s. Twenty healthy subjects, were included in the study as a control group matched by age and sex.

RESULTS

This cross-sectional study revealed a significant correlation between the expression of the TET 1 gene in ALL patients and their clinical and pathological criteria.

In case of B-ALL, patients the TET1 gene expression was significantly low in 76.9% of patients, only the B-ALL patients carrying MLL gene rearrangements showed TET1 up-regulation, However, the upregulation of the TET1 gene in those patients in our study was not significant due to small number of B-ALL patients carrying MLL gene rearrangement

Surprisingly for T-ALL patients, this study reported a significantly high expression of the TET1 gene in all 8 (100%) of T-ALL patients.

Besides, we also found that TET1 expression level was significantly lower in patients with a high percent of blast cells in P.B and B.M, generalized lymphadenopathy, and fever

CONCLUSIONS

The TET1 gene plays dichotomous roles in ALL as we demonstrated that TET1 exerts an oncogenic role in T-ALL in contrast to B-ALL in which TET1 acts as a tumour suppressor, thus rendering TET1 as a potential target for treating this form of hematopoietic malignancy.

Moreover, the TET 1 gene in ALL patients can be correlated to their clinical and pathological criteria as the TET1 expression was significantly lower in patients with a high percent of blast cells in P.B and B.M., generalized lymphadenopathy, and fever.

CONTACT INFORMATION

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