

The Predictive Value of Micro Rna 451 on the Outcome of Imatinib Treatment in Chronic Myeloid Leukemia Patients

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Abstract : Background: Chronic myeloid leukemia (CML) represents 15% of adult leukemias. Imatinib Mesylate (IM) is the gold standard treatment for new cases of CML. Treatment with IM results in improvement of the majority of cases. However, about 25% of cases may develop resistance. Sensitive and specific early predictors of IM resistance in CML patients have not been established to date. Aim: To investigate the value of miR-451 in CML as an early predictor for IM resistance in Egyptian CML patients. Methods: The study employed Real time Polymerase Reaction (qPCR) technique to investigate the leucocytic expression of miR-451 in fifteen newly diagnosed CML patients (group I), fifteen IM responder CML patients (group II), fifteen IM resistant CML patients (group III) and fifteen healthy subjects of matched age and sex as a control group (group IV). The response to IM was defined as < 10% BCR-ABL transcript level after 3 months of therapy. The following parameters were assessed in subjects of all the studied groups: 1- Complete blood count (CBC). 2- Measurement of plasma level of miRNA 451 using real-time Polymerase Chain Reaction (qPCR). 3- Detection of BCR-ABL gene mutation in CML using qPCR. Results: The present study revealed that miR-451 was significantly down-regulated in leucocytes of newly diagnosed CML patients as compared to healthy subjects. IM responder CML patients showed an up-regulation of miR- 451 compared with IM resistant CML patients. Conclusion: According to the data from the present study, it can be concluded that leucocytic miR- 451 expression is a useful additional follow-up marker for the response to IM and a promising prognostic biomarker for CML.

Keywords : chronic myeloid leukemia, imatinib resistance, microRNA 451, Polymerase Chain Reaction

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