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## Introduction

Imatinib is the first-line treatment for chronic myeloid leukemia (CML). Genetic variations in the efflux transporters such as ABCG2 may play important roles in the safety of Imatinib. Polymorphism of ABCG2 gene may act as a good predictor for response and toxicity of Imatinib in CML Egyptian patients. The purpose of the present study was to investigate the association between ABCG2 gene polymorphism with the Imatinib adverse effects in CML patients.

## Materials and methods

One hundred and two patients with CML at chronic phase were recruited in this study. Genetic polymorphism of the genes ABCG2 SNPs 34 G>A was studied using PCR-RFLP technique. The relationship was examined between ABCG2 SNPs 34 G>A gene polymorphism and dizziness as well as headache which are two of the most frequently occurring adverse effects of Imatinib.

## Results

Forty-seven of the participants were males with average ages of 40.6 ±11years. While 29 patients (28.4%) experienced no adverse events, dizziness, headache were detected as two of the most prevalent adverse events of Imatinib. Of our patients, 81.4% had the wild-type GG allele of the efflux transporter ABCG2.34 G>A gene, 16.7% had the heterozygous GA allele, and 2% had the variant type AA. This study found a statistically significant relation between ABCG2.34G>A and dizziness as well as headache frequency ($P<0.001$). After carrying out binary logistic regression analyses, no significant risk factors were detected in relation to the occurrence of headache. Regarding the occurrence of dizziness, we reported that the occurrence of dizziness increased by 2.3 times in patients with heterozygous GA allele of the ABCG2.34 ($P<0.001$) compared to homozygous wild type GG.

## Conclusion

Our observation emphasizes that, Imatinib may cause dizziness and headache. Also, it was found that the ABCG2.34 G>A gene polymorphism has an effect on the occurrence of dizziness and headache in patients treated with Imatinib as well as its effect on the response of Imatinib as previously mentioned. Finally, it can be concluded that therapeutic drug monitoring and Pharmacogenetic screening are required to improve Imatinib therapy management.

*Keywords:*
*Imatinib, Chronic myelogenous leukemia, Polymorphism, Adverse effects*

*References:*
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