Genetic variants in 6-mercaptopurine pathway as potential factors of hematological toxicity in acute lymphoblastic leukemia patients

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Abstract:

Aim: We investigated the associations between variants in genes coding for enzymes and transporters related to the 6-mercaptopurine pathway and clinical outcomes in pediatric patients with acute lymphoblastic leukemia. MATERIALS & METHODS: Statistical association between gender, age and genotypes of selected SNPs, and the risks of hematological toxicity and relapse were investigated using a Cox proportional hazard model in 70 acute lymphoblastic leukemia patients from upper Egypt. RESULTS: We found significant associations between ITPA, IMPDH1, SLC29A1, SLC28A2, SLC28A3 and ABCC4 SNPs and one or more of the hematological toxicity manifestations (neutropenia, agranulocytosis and leukopenia); age was significantly related to relapse. CONCLUSION: Genetic polymorphisms in enzymes and transporters involved in the 6-mercaptopurine pathway should be considered during its use to avoid hematological toxicity.

Keywords:

6-mercaptopurine; childhood acute lymphoblastic leukemia; leukopenia; neutropenia; pharmacogenetics; relapse

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