Polymorphisms of the drug transporters ABCB1 SNP rs8187710 and its impact on subclinical anthracycline-based chemotherapy cardiotoxicity

5th Kaunas / Lithuania International
Hematology / Oncology Colloquium
26 JUNE 2020

Domas Vaitiekus [1], Gintare Muckiene [2], Ruta Inciuraite [3], Ruta Insodaite [4], Rasa Ugenskiene [4,5], Renaldas Jurkevicius [2], Elona Juozaityte [1]

1 Department of Oncology and Hematology, Medical Academy, Lithuanian University of Health Sciences, Lithuania
2 Department of Cardiology, Medical Academy, Lithuanian University of Health Sciences, Lithuania
3 Institute for Digestive Research, Medical Academy, Lithuanian University of Health Sciences, Lithuania
4 Biology System and Genetic Research Institute, Faculty of Animal Science, Veterinary academy, Lithuanian University of Health Sciences, Lithuania
5 Oncology Research Laboratory, Oncology Institute, Faculty of Medicine, Medical Academy, Lithuanian University of Health Sciences, Lithuania

Objective

The core stone of breast cancer chemotherapy is anthracycline-based chemotherapy. With evolution of echocardiography, subclinical damage is identified, and more sensitive evaluation can be performed. This leads to understanding the heart damage beyond cumulative dose in early phase and importance of other risk factors. There are many risk factors for anthracycline-based chemotherapy cardiotoxicity (ABCC). One of possible pathways is intra cellular drug transporters and ABCB2 rs8187710 gene regulated pathway could be one of possible targets for investigation. Objectives: The main objective of our study was to identify the impact of ABCB2 rs8187710 SNP (single nucleotide polymorphism) on the development of subclinical heart damage during and/or after doxorubicin-based chemotherapy in breast cancer patients.

Methods

Prospective study was done. Data of 73 women with breast cancer treated with doxorubicin-based chemotherapy in outpatient clinic were analyzed and SNP RT-PCR tests performed.

Results

Statistically no significant association between ABCB2 rs8187710 and ABCC after completion of chemotherapy was observed (p=0,92).

Allele/Genotype	Controls (n=43)	Cardiotoxicity (n=30)		
	n (%)	n (%)	OR (95% CI)	p
***ABCB2* rs8187710**				
A	2 (4,65)	2 (5,00)	1,08(0,23-5,01)	0.92
G	41 (95,35)	28 (95,00)		
AA	0 (0)	0 (0)	NA	NA
AG	4 (9,3)	3 (10,00)	NA	NA
GG	39 (90,7)	27 (90,00)	1 (Reference)	
AA, AG vs. GG			1,08 (0,22-5,24)	0.92
AA vs. AG, GG			NA	NA

Conclusions

Consequently, our study demonstrated that ABCB2 rs8187710 SNP has no statistically significant important role in the development of ABCC. Further, larger volume studies are required

Key words

Anthracycline cardiotoxicity; ABCB1