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THE SIGNIFICANCE OF P53 CODONS 72 AND 213 POLYMORPHISMS IN URINARY BLADDER CANCER IN CENTRAL POLAND

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INTRODUCTION: A major interest in human genetics is to distinguish functionally neutral mutations and polymorphism from those that contribute to disease. Polymorphic variants of the P53 gene at codon 72 are associated with cancer susceptibility. The aim of our study was to characterize P53 polymorphism at codons 72 (ARG/PRO) and 213 (ARG/ARG) in bladder cancer patients and in a control group in Poland.

METHODS: 95 patients with clinically diagnosed urinary bladder tumour were included in the study. Pathology classified 36 tumours as low grade and 59 as high grade. Tumour stage was pTa or less in 30 patients and at least pT1 in 65 patients. The control included DNA samples from blood of 84 cancer-free people (Medical University students). The demonstration of codon 72 and codon 213 P53 polymorphism was performed using the PCR (Polymerase Chain Reaction) and MSSCP (Multitemperature Single Strand Conformation Polymorphism) technique.

RESULTS: In the group of healthy people we found the following distribution of polymorphism: ARG/ARG – 58.3%, ARG/PRO – 40.5%, PRO/PRO – 12.2%. In the group of people suffering from urinary bladder cancer it was 56.8%, 43.2% and 0.0%, respectively. The statistical analysis of the distributions by the G test did not reveal any significant difference (G=0.433). In six cases of bladder cancer patients, polymorphism was found at codon 213 of the P53 gene (6/95-6.3%). In the control group polymorphism was diagnosed in two cases (2/84-2.4%). Polymorphism at codon 213 appeared in four cases ARG/ARG genotype at codon 72 and in two cases ARG/PRO genotype. In the controls, we found one ARG/ARG genotype case and one ARG/PRO genotype case with the simultaneous presence of P53 polymorphism at codon 72.

CONCLUSION: We have not discovered that one of the polymorphic variants of the gene P53 codon 72 is the factor increasing the risk of urinary bladder cancer development in the Polish population. It needs to be mentioned, however, that the ARG/ARG genotype (leading to this kind of cancer, according to other researchers) is dominant in the tested population. It may explain the high rates of morbidity and mortality from urinary bladder cancer in man in Poland. Test on both polymorphism need to be held on a bigger group of patients so as to find a complete answer to this question.
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