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Vitamin D gene polymorphism in multiple myeloma, chronic lymphocytic leukemia and chronic myeloid leukemia

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Introduction: 1, 25 dihydroxy vitamin D3 plays role in biological events like bone metabolism, natural immune system functions, cell proliferation and differentiation. In carcinogenesis, vitamin D3 affects expression of tumor related genes or mediates cell proliferation, adhesion, migration, metastasis and inhibition of angiogenesis. It makes transcriptional activation and inhibition of target genes by binding to intranuclear vitamin D receptor (VDR). VDR is included in steroid hormone receptor family and it is active in all tissues, and in cancer cells as well. Its gene is located in 12th chromosome (12q12-q14) and has different gene polymorphisms. The most frequent gene polymorphisms are Apal, Bsml, Fokl and Tagl. VDR gene polymorphism was associated with most cancers. It was hypnotized that less active VDR increases cancer risk in cases who have same amount of vitamin D intake. In current study, we investigated the Apal, Bsml, Fokl and Tagl gene polymorphisms in Turkish patients with multiple myeloma (MM), chronic lymphocytic leukemia (CLL) and chronic myeloid leukemia (CML) and we compared the clinical features of the cases with gene polymorphisms.

Methods: Sixty-two patients with MM (25 female/37 male), 69 patients with CLL (22 female/47 male), 50 patients with CML (27 female/24 male) and 110 healthy subjects (50 female/60 male) as control group were included in the study. DNA isolation was made by salting-out method from the venous blood samples of the cases and control subjects. The genotype analyzes were performed by ABI Prism 7500 RT-PCR by using TaqMan primary probes (Metabion). Applied Biosystem SDS 2.0.6 software was used for allelic distinction. The results were evaluated together with clinical features.

Results: Clinical features of the cases were shown in table 1, 2, 3. When compared with the control group, we did not find a significant difference in Apal, Bsml, Fokl and Taql polymorphisms in MM, CLL and CML patients ($p>0.05$). We did not find a significant difference between the clinical features of the cases (age, sex, stage, β2-microglobulin, sedimentation, albumin, creatinine, calcium in MM; age, sex, stage, B symptoms in CLL, age, sex, Sokal risk score in CML) with VDR gene polymorphisms.

Conclusion: In a previous study, it was found that Fokl gene ff polymorphism was associated with an increased risk of disease development in cases with MM in "Kashmiri population". We did not find a study investigating the VDR gene polymorphisms in cases with CLL and CML in the literature. However, there are some studies showing the lymphocyte lowering effects of vitamin D therapy in CLL patients. In current study, we did not find a correlation between VDR gene polymorphisms with development of MM, CLL and CML in Turkish cohort. However, we think that more studies including more patients are needed to verify these results.

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