**Introduction**

Vitamin D co-regulates the synthesis of sex hormones. The aim of this study was to determine whether polymorphisms (TaqI, Apal, BsmI and FokI) of the vitamin D receptor (VDR) show a correlation with the serum level of the testosterone in the aging men population.

**Material and methods**

A group of 224 men aged 65-90 years, randomly selected from the group of 5695 persons included in the PolSenior project was studied. We established genotype prevalence of the vitamin D receptor gene polymorphisms (TaqI - rs10735810, Apal - rs1544410, BsmI - rs7975232, FokI - rs731236) and testosterone serum concentration levels. Polymorphisms were divided into two models: protective (TaqI - TT genotype, ApaI - aa genotype, BsmI - genotype BB, FokI - genotype FF) and risk (TaqI - tt genotype, ApaI - AA genotype, BsmI - genotype bb, FokI - genotype ff). The cumulative effect of these two models on the concentration of testosterone were calculated.

**Results**

Risk model of the polymorphism Fok shows significantly higher serum levels of the testosterone than the protective model ($p=0.0436$).

Although the carriers of the protective model of ApaI, TaqI and BsmI polymorphisms have a higher serum testosterone level, it doesn’t reach statistical significance ($p=0.5568$, $p=0.6327$, $p=0.0653$).

Analysis of the combined effect of all models of polymorphisms indicates that the protective model is associated with higher levels of testosterone, but it doesn’t reach statistical significance ($p=0.7908$).

**Conclusion**

- Persons with genotype ff (risk) of the Fok polymorphism have a significantly higher level of the testosterone;
- Protective model of TaqI, ApaI, BsmI polymorphisms is also correlated with higher level of the testosterone;
- Haplotype bAt associated with the low levels of the VDR gene expression, correlates with a lower concentration of serum testosterone.

**The effect of VDR polymorphisms on serum testosterone level in aging men population.**

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