# VITAMIN D RECEPTOR GENE POLYMORPHISMS IN KIDNEY TRANSPLANT RECIPIENTS

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## BACKGROUND

Vitamin D obtained from sun exposure, foods and supplements is biologically inert. Kidneys and liver transform it into an active form (1,25OH D3), called calcitriol. This is a pleiotropic hormone whose effects go beyond its traditional role in calcium homeostasis.

The biological effects of calcitriol are expressed after the activation of vitamin D receptor (VDR). The *VDR* gene is highly polymorphic.

Several studies have examined individual polymorphisms of the VDR gene in various diseases and conditions. We investigated the impact of different *VDR* polymorphisms in kidney transplant recipients.

## METHODS

In our retrospective study we analyzed 143 patients from Slovenian national cohort of patients with functional kidney graft.

Clinical and laboratory data were taken from patient's medical records. They included cytomegalovirus infection, polyoma BKV infection and new onset diabetes after transplantation (NODAT) in the first posttransplant year, and serum creatinine, estimated glomerular filtration rate (eGFR), donor specific antibodies and kidney biopsy at the end of the first posttransplant year.

We used real time polymerase chain reaction KASPar tests to determine the common functional polymorphisms of the VDR gene:

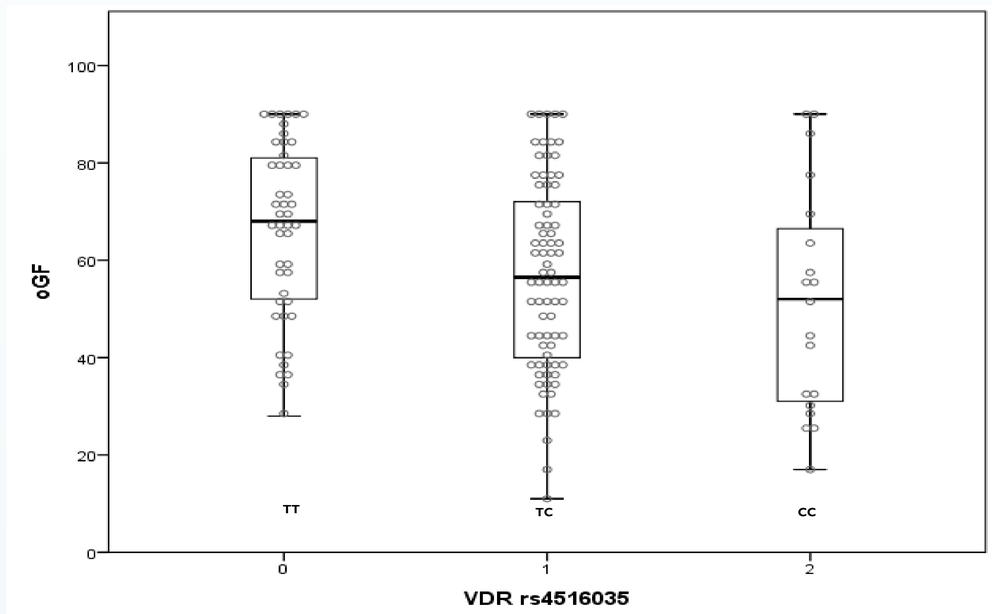
- rs11568820 - Cdx2,
- rs4516035 - GATA,
- rs2228570 - FokI,
- rs1544410 - BsmI,
- rs731236 - TaqI and
- rs739837 - Bg*l*l.

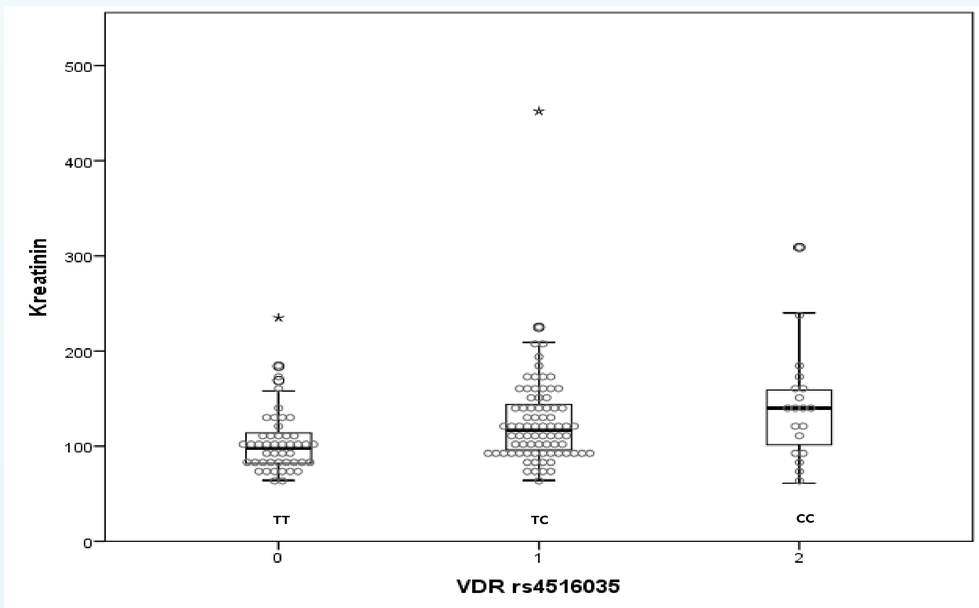
Using SPSS statistical analysis, we looked for the associations between the polymorphisms and patient's characteristics.

## RESULTS

The rs4516035 (GATA) was associated with increased serum creatinine and decreased eGFR at the end of the first post transplant year. The frequency of *VDR* GATA polymorphic alel C was 40,6 and of the genotypes TT, TC and CC - 32,2%, 54,5% and 13,3%, respectively. Pairwise comparisons of heterozygotes and homozygotes for the normal allele (TC vs TT) and between homozygotes for the polymorphic allele and homozygotes for the normal allele (CC vs TT) showed a statistically significant difference (P = 0,003 and 0,005, respectively) in serum creatinine and eGFR at the end of the first post transplant year.

None of the studied polymorphisms were associated with kidney rejection, CMV or BKV infection and NODAT in the first post transplant year.




## CONCLUSION

The rs4516035 (*VDR* GATA) polymorphism correlates significantly with increased serum creatinine and decreased eGFR at the end of the first post transplant year.

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