The relationship of genetic factors to the development of nephrolithiasis in primary hyperparathyroidism (PHPT)

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**Objective:**
Factors affecting the development of nephrolithiasis (NL) in PHPT actively studied. Studies have shown that polymorphisms CASR may be associated with risk of NL in patients PHPT. Expected the role of VDR polymorphisms in the development of kidney stones in the general population, but its importance in the pathogenesis of NL in patients PHPT unknown.

**Objective:** To assess the relationship of polymorphisms CASR and VDR with the development of the NL at PHPT.

**Methods:**
The study included 187 patients with PHPT (54 [49; 64] years), 110 with NL, 77 without. Exclusion criteria were genetically confirmed by multiple endocrine neoplasia syndrome type I or II, suspicion of MEN syndrome based on the identification of patients younger than 40 years PGT two or more adenomas (hyperplasia) of the parathyroid glands, and / or entities pituitary, adrenal, pancreatic, neuroendocrine tumors of the gastrointestinal tract, normocalcemic PHPT, severe chronic renal failure, hepatic failure, congenital anomalies of the kidney and urinary tract diseases, cancer and severe somatic diseases.

Groups did not differ in age (p=0.886) and sex (p=0.15). All patients were examined: biochemical blood analysis (total and ionized calcium, phosphorus, creatinine to estimate GFR, alkaline phosphatase), the definition of a daily urinary calcium excretion, hormonal analysis of PTH. All patients were analyzed polymorphisms CASR. In 166 patients (110 with NL, 56 without) were analyzed polymorphisms VDR: Apal, BsmI, FokI, Cdx2, TaqI. The distribution of genotypes consistent with the condition of Hardy-Weinberg.

In patients with NL had significantly higher levels of total and ionized calcium (p = 0.014 and p = 0.0019, respectively), PTH (p = 0.0004) and alkaline phosphatase (P = 0.09), hypophosphatemia (p = 0.034). The level of calcium in the urine did not differ between the groups. Tab.1

The most common in both groups were polymorphisms R990Q (23.6% vs 21.8%) and A986S (29.1% vs 37.9%), Q1011E (16.4% vs 9.2%) met the most rare, the differences are not reliable (p>0.05). Not obtained differences in the frequency of genotypes and alleles CASR between the groups (P> 0.05).

In the analysis of the frequency of VDR polymorphisms also did not differ between groups (p>0.05). The distribution of genotypes and alleles of VDR polymorphisms in the presence and absence of NL was not significantly different (p>0.05). Tab.2, 3.

**Conclusions:**
According to the results revealed a high prevalence of polymorphisms of VDR and CASR patients with PHPT. The development of nephrolithiasis in PHPT not associated with the presence of VDR polymorphisms and CASR. Perhaps the need to search for other genetic markers. Patients with NL characterized by higher levels of calcium and PTH levels.


**References:**
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