Vascular Endothelial Growth Factor Polymorphism +405 G/C is Associated With Early Stage Of Diabetic Nephropathy In Patients With Type 2 Diabetes

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Rationale

One of the basic genetic factors that impact on development of diabetic nephropathy is enhanced expression of VEGF (Vascular Endothelial Growth Factor) [1].

Objectives

The purpose of investigation was to study association between VEGF polymorphism +405 G/C and early stage of chronic kidney disease (CKD) in patients with impaired glycemic states.

Materials and methods

73 included patients were divided into 3 groups:
Group 1 – 26 patients with prediabetes (impaired fasting glucose and impaired glucose tolerance),
Group 2 – 28 patients with type 2 diabetes (T2D),
Group 3 – 20 almost healthy person.
To determine the stage of CKD we calculated glomerular filtration rate (GFR; ml/min/1,73m^2) by Cockcroft-Gault equation. Patients with CKD 3-5 were excluded.

Materials and Methods

We estimated distribution of VEGF genotype in study groups.

Results

	Group 1 (n=26)		Group 2 (n=28)		Group 3 (n=19)	
	CKD1(n)	CKD2(n)	CKD1(n)	CKD2(n)	CKD1(n)	CKD2(n)
G/C	4*	3*	3	11	6	2
C/C	2*	4*	1*	-	1	-
G/G	13*	-	10*	3*	10	-
***differences are not statistically significant**						

We revealed that VEGF +405 G/C polymorphism in patients with T2D was associated with decreased GFR (CKD2): 84,28 [82,59;87,38] ml/min/1,73m^2 compared to 106,07 [89,63;136,91] ml/min/1,73m^2 in control group (p=0,02).
We didn't reveal statistical significance in groups with VEGF polymorphism C/C and G/G.
It can be assumed that polymorphism C/C and G/G possess nephroprotective action.

Increased glucose levels promote activation of VEGF +405 G/C polymorphism.

Conclusions

VEGF +405 G/C polymorphism was associated with Stages 1-2 of CKD in patients with T2D and was not associated with GFR impairment in patients with prediabetes.

References

1. Local VEGF activity but not VEGF expression is tightly regulated during diabetic nephropathy in man. B Hohenstein, B Hausknecht, K Boehmer, R Riess, R A Brekken and C P M Hugo. Kidney International (2006) **69,** 1654–1661.

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