

만성신질환 환자에서 예후 인자로서의 Serum Vascular Endothelial Growth Factor -C

서울대학교병원 내과학교실

조현정, 유경돈, 양승희, 김연수, 이하정

Serum Vascular Endothelial Growth Factor-C (VEGF-C) as a Novel Prognostic Factor in Patients with Chronic Kidney Disease

Hyunjeong Cho, Kyung Don Yoo, Seung Hee Yang, Yon Su Kim, Hajeong Lee

Department of Internal Medicine, Seoul National University Hospital, Seoul, Korea

Background: In recent years, the involvement of angiogenesis-related factors in the progression of Chronic kidney Disease (CKD) has been studied. Vascular Endothelial Growth Factor (VEGF-C) is regarded as one of the most efficient factors in regulating lymphangiogenesis. The aim of this study was to better understand the role of VEGF-C in the progression of CKD and to assess its prognostic significance.

Methods: We recruited CKD patients (n=157) in outpatient department and healthy volunteers (n=39) from Seoul National University Hospital for the clinical study, 'Measurement of glomerular filtration rate and calculation of GFR estimates for Korean' from April 2008 to May 2012. Initial GFR was measured by systemic inulin clearance. Serum levels of VEGF-C were determined by ELISA method. Primary outcomes were a 50% decline in renal function, progression to end-stage renal disease (ESRD), or all-cause mortality. Secondary outcome was a change in antihypertensive drug requirements for study. Renal survival (ESRD-free) was estimated with the Kaplan-Meier method.

Results: The median serum level of VEGF-C was significantly decreased with increased CKD stage (551.69 in CKD 1, 461.50% in CKD 2, 459.07 in CKD 3, 367.01 in CKD 4, 377.50 in CKD 5; p=0.015). We stratified patients into three groups according to tertiles of VEGF-C levels as follows: group I (>527.1 pg/mL), group II (398.9-527.1 pg/mL) and group III (< 398.9 pg/mL). The presence of DM in low VEGF-C group is significantly higher than high VEGF-C group (3.1% in group I, 6.9% in group II, 10.7% in group III; p=0.040). The presence of hypertension in low VEGF-C group is also significantly higher than high VEGF-C group (14.5 % in group I, 23.3% in group II, 23.3% in group III; p=0.051). There were no statistically significant differences in mean age (53±17 years in group I, 58±15 years in group II, 61±14 years in group III; p=0.061), percentage of proteinuria (30.2/93.5% in group I, 30.3/93.5% in group II, 33.1/93.5% in group III; p=0.280). There were no differences between low VEGF-C group and high VEGF-C group for antihypertensive drug requirements (p=0.371). In the renal survival analysis, low VEGF-C group had significantly shorter overall survival time than high VEGF-C group (Log Rank p=0.001).

Conclusion: These results indicated that serum VEGF-C may be a clinically useful indicator for prognostic evaluation in CKD patients. More importantly, study about the therapeutic modulation of VEGF-C in CKD patients should be further investigated.

Key Words: VEGF-C, 만성신질환, 예후인자
VEGF-C, CKD, Prognostic factor