THE INCREASED SERUM ANGIOPOIETIN2 AND MCP-1 IN ASIAN PATIENTS WITH DIABETIC CHRONIC KIDNEY DISEASE

Jong Hwan Jung, Woong Park, Tung Nguyen-Thanh, Sung Kwang Park and Won Kim

Research Institute of Clinical Medicine of Chonbuk National University-Biomedical Research Institute of Chonbuk National University Hospital, Chonbuk National University Hospital, Jeonju, Republic of Korea

Background

Diabetic chronic kidney disease (CKD) is well established as an independent risk factor of cardiovascular or cerebrovascular disease. According to several literatures reported so far, the plasma angiogenic biomarkers such as plasma monocyte chemoattractant protein-1 (MCP-1), angiopoietin-2 (Ang-2), fractalkine, vascular endothelial growth factor (VEGF) are well correlated with atherosclerotic adverse outcomes in diabetic patients without a renal impairment. However, there were few reports about these biomarkers in especially Asian patients with diabetic CKD.

Method

We divided diabetic CKD patients into two groups: CKD stage 3 and 4, and CKD stage 5. Total forty two Asian patients with diabetic CKD and seven healthy controls without diabetes mellitus have been enrolled in this study. In this cross-sectional study, we performed comparative analysis with levels of several angiogenic biomarkers, such as MCP-1, Ang-2, fractalkine, VEGF-A, and VEGF-C in patients with diabetic CKD of stage 3 and 4, and 5. We recognized levels of these several biomarkers through the multiplexing using Luminex® technology.

Results

Ang-2 (p=0.003) and MCP-1 (p=0.002) were higher in diabetic CKD stage 3 and 4 than in normal control subjects. Ang-2 (p=0.004) and MCP-1 (p=0.021) were also higher in diabetic CKD stage 5 than in control subjects. But, there were no statistically significant difference between other markers, such as Fractalkine, VEGF-A, and VEGF-C in stage 3 to 5 diabetic CKD patients and control subject without diabetes mellitus. The increases of plasma level of Ang-2 (p=0.311) and MCP-1 (p=0.873) according to increase of the diabetic CKD stage were not shown statistically significant. In addition, there were no significant differences between diabetic CKD patients with macrovascular complication and diabetic CKD patients without macrovascular complication in each plasma level of MCP-1 (p=0.678) and Ang-2 (p=0.763).

Table 1. Baseline characteristics

Variables	Normal	Stage 3 and 4	Stage 5	p
Age, year	51 (47, 58)	65.5(51, 73)	59 (49.5, 74.8)	0.072
Male, n (%)	3 (42.9)	15 (53.6)	9 (64.3)	0.629
SBP, mmHg	120 (115, 130)	126.5 (120.0, 141.25)	133 (114, 146)	0.342
DBP, mmHg	70 (65, 75)	68 (63.25, 75.75)	71.0 (64.50, 81.75)	0.490

*All continuous variables are described by the median, 25th and 75^{t} percentile.

Table 2. Comparison of levels of angiogenic biomarkers according to diabetic CKD stage

Variables	Normal	Stage 3 and 4	Stage 5	p^1	p2	p^3
Fracktalkine	0.63	6.81	4.18	0.601	0.245	0.273
MCP-1	395.72	603.46	571.71	0.873	0.002	0.021
Ang-2	976.07	1825.0	2192.0	0.311	0.003	0.004
VEGF-A	243.62	467.20	246.29	0.470	0.649	0.849
VEGF-C	1118.0	822.87	800.25	0.926	0.076	0.062

Cryptogenic 43 %

*All continuous variables are described by the median

p^1: stage 3 and 4 vs stage 5, p^2 : stage 3 and 4 vs normal, p^3: stage 5 vs normal

Conclusion

The increase of Ang-2 and MCP-1 in Asian patients with diabetic CKD stage 3, 4, and 5 will support the fact that diabetic CKD itself can be independent risk factor of atherosclerotic diseases regardless of macrovascular complications.

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