Association of serum resistin with TNF system activity in Japanese type 2 diabetic patients

The major clinical consequence of type 2 diabetes is mortality and morbidity from atherosclerotic vascular disease. Bierman [1] estimated that typical risk factors including blood pressure, cholesterol, and smoking, can account for no more than 30% of excess cardiovascular risk factor in diabetic patients. Thus, other factors are likely to be involved in the progression of atherosclerosis in diabetes.

One potential factor is resistin. Reilly et al. [2] demonstrated that plasma resistin levels are predictive of coronary atherosclerosis in humans, independent of C-reactive protein. Thus, there is a possibility that resistin contributes to the development of coronary atherosclerosis by cooperating with other specific inflammatory marker.

Along with insulin resistance, tumor necrosis factor (TNF) seems to have a potent candidate for the pathogenesis of atherosclerosis. Rauchhaus et al. [3] demonstrated that elevated soluble TNF receptor 1 (sTNF-R1) is predictive of cardiovascular mortality in patients with chronic heart failure. We found that sTNF-R1 is independently associated with albuminuria or homocysteine in type 2 diabetic patients [4,5]. Albuminuria and homocysteine are considered to be associated with atherosclerosis in type 2 diabetic patients [6,7]. To the best of our knowledge, however, it is unclear whether serum resistin is associated with sTNF-R1 in type 2 diabetic patients. The aim of the present study is therefore to investigate the relationships between serum resistin and TNF system activities including sTNF-R1 in type 2 diabetic patients.

Sixty Japanese type 2 diabetic patients were enrolled. Their age and body mass index (BMI) (mean ± S.E.M.) were 60.6 ± 1.3 years and 24.1 ± 0.4 kg/m², respectively. The concentrations of fasting glucose and glycated hemoglobin (HbA1c) were 136 ± 4 mg/dl and 6.7 ± 0.1%, respectively. They had no evidence of current acute illness including clinically significant infectious disease. Along with resistin, white blood cell (WBC), insulin, lipids, TNF-α, sTNF-R1, sTNF-R2, high sensitive C-reactive protein (hsCRP), interleukin 6 (IL-6), adiponectin, and leptin were measured in the morning after an overnight fast as described previously in [8–12].

Univariate analysis showed that serum resistin was positively correlated to TNF-α (r = 0.329, P = 0.012), sTNF-R1 (r = 0.386, P = 0.003), sTNF-R2 (r = 0.353, P = 0.007), IL-6 (r = 0.293, P = 0.024), and the counts of WBC (r = 0.462, P < 0.001). Other variables including BMI, insulin, triglycerides, hsCRP, adiponectin, and leptin, however, were not associated with serum resistin. Multivariate regression analysis revealed that serum resistin was independently predicted by sTNF-R1 (F = 6.8) and WBC count (F = 23.6), which explained 45.4% of the variability of serum resistin. Thus, it may be suggested that resistin is associated with TNF system activity in Japanese type 2 diabetic patients.

References


N. Kitatani
A. Taniguchi*

Division of Diabetes and Clinical Nutrition, Kansai-Denryoku Hospital, 2-1-7 Fukushima, Fukushima-Ku, Osaka-City, 553-0003 Osaka, Japan

E-mail address: taniguchi.ataru@a5.kepco.co.jp

(A. Taniguchi).

M. Fukushima

Department of Health Informatics Research Translational Research Informatics Center, Kobe, Japan
Y. Nakai
Karasuma-Oike-Nakai Clinic, Kyoto, Japan

S. Nagasaka
Division of Endocrinology and Metabolism,
Jichi Medical School,
Tochigi, Japan

M. Ohgushi
M. Ohya
A. Kuroe
Division of Diabetes and Clinical Nutrition, Kansai-Denryoku Hospital, 2-1-7 Fukushima, Fukushima-Ku, Osaka-City, 553-0003 Osaka, Japan

N. Inagaki
Department of Diabetes and Clinical Nutrition, Kyoto University Graduate School of Medicine, Kyoto, Japan

Y. Seino
Division of Diabetes and Clinical Nutrition, Kansai-Denryoku Hospital, 2-1-7 Fukushima, Fukushima-Ku, Osaka-City, 553-0003 Osaka, Japan

Received 3 October 2006; accepted 30 October 2006
Available online 27 March 2007
*Corresponding author.