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Editorial

Impact of SOCS2 Polymorphisms on Type 2 Diabetes Mellitus

Pavan Kumar*

Departement of Immunology, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

EDITORIAL

Type 2 Diabetes Mellitus (T2DM) is a serious metabolic disorder with chronic hyperglycemia characterized by impaired insulin secretion and resistance. Globally, the International Diabetes Federation displayed more than 451 million people with diabetes in 2017. With the aging population and the westernization of lifestyle, the prevalence of diabetes in China has been rising rapidly from 0.67% in 1980 up to 10.4% in 2013. In china, approximately 11% of the population has diabetes, with a significant proportion remaining undiagnosed. The pathogenesis of T2D is complicated and multifactorial, which is driven by environmental, lifestyle and genetic factors. Age, sex, cigarette smoking, alcohol drinking and overweight have been reported to be risk factors for T2DM. In addition, genetic factors contribute strongly to the etiology and manifestation of T2DM. To date, many risk loci have been recognized to affect T2DM susceptibility, but numerous loci remain to be detected.

Suppressor of Cytokine Signaling 2 (SOCS2) proteins is a member of the suppressor of cytokine signaling family, which is a negative regulator of cytokine and growth factor signaling. SOCS2 protein was reported to interact with the insulin-like growth factor-1 receptor and decrease its biological actions. SOCS2 was down regulation in diabetes, which might be related to either insulin deficiency or resistance. SOCS2 was involved in hyperglycaemia and glucose intolerance caused by the abnormal regulation of proinsulin processing and insulin secretion in beta cells. The overexpression of SOCS2 possesses the protective function in the development of diabetic nephropathy by reducing the expression of inflammatory cytokines and suppressing the activation of JAK/STAT pathway. These physiological studies proposed that SOCS2 might play an important role in diabetes, but the role of genetic polymorphism within SOCS2 gene for T2DM predisposition has been less studied. Therefore, we chose SOCS2 gene as a candidate gene to explore the effect of single-nucleotide polymorphisms in SOCS2 on the development of T2DM.

Here, five SNPs (rs10859525, rs3825199, rs11107116, rs10492321, and rs10859563) in SOCS2 were genotyped to examine the contribution of genetic variants in SOCS2 to the risk of T2DM occurrence at single-locus and combined SNPs interface. Our study also investigated whether the relationship of SOCS2 polymorphisms with T2DM risk persists across age, gender, lifestyle and BMI. Further, the contribution of SOCS2 polymorphisms to the susceptibility diabetic complications was explored in the Chinese Han population.

The study group consisted of 500 T2DM patients and 501 healthy volunteers from the affiliated Hospital. All enrolled subjects were unrelated Chinese Han ethnicity. Patients with type 1 diabetes, gestational diabetes, malignancy, acute infections, inflammation, other chronic diseases or other endocrine disease, and not receiving any drugs like anti diabetics were excluded. The controls were age and sex matched no history of diabetes and other chronic diseases. Information on demographics, life style factors and clinical characteristics of the participants was obtained from standardized questionnaires and medical record, including age, sex, body mass index (BMI), smoking, drinking, fasting blood glucose, total cholesterol, triglyceride, low-density lipoprotein cholesterol and high-density lipoprotein cholesterol, urea, creatinine, serum uric acid, glycated hemoglobin, and insulin.

Correspondence to: Pavan Kumar, Departement of Immunology, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India, E-mail: Pavanmadhu@gmail.com

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