

The Association of Serum Cystatin C with Glycosylated Hemoglobin in Korean Adults (*Diabetes Metab J* 2016;40:62-9)

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Cystatin C is a more sensitive indicator of mild renal impairment and better estimates the glomerular filtration rate than serum creatinine [1]. Recently, cystatin C has been suggested to provide information beyond renal function. Several studies suggested that cystatin C is associated with obesity, atherosclerosis, insulin resistance, and hypertension [2,3]. Furthermore, in Western populations, elevated levels of serum cystatin C are associated with prediabetes or diabetes [4-6].

In this article entitled “The association of serum cystatin C with glycosylated hemoglobin in Korean adults,” Sim et al. [7] evaluated the association between cystatin C and prevalence of diabetic conditions defined by glycosylated hemoglobin (HbA1c) levels in Korean adults. They described that higher levels of serum cystatin C are associated with an increased prevalence of diabetic conditions in Korean adults. Interestingly, the positive association between cystatin C and diabetic conditions was not significant in the multivariable models, and this result was consistent with a previous study [6]. Although the ethnic differences in this association are not fully understood, the association between cystatin C and diabetic conditions may be weaker in Asian populations compared to white populations. However, there are several issues that need to be discussed.

First, Sabanayagam et al. [6] examined the association between serum cystatin C and prediabetes in non-obese United States adults. They examined 2,033 participants from the Na-

tional Health and Nutrition Examination Survey 1999 to 2002, aged ≥ 20 years who were free of diabetes mellitus and chronic kidney disease. Compared to those with cystatin C in the lowest quartile (quartile 1), the multivariate odds ratio (OR) of prediabetes among those in the highest quartile (quartile 4) was 2.08 (95% confidence interval [CI], 1.09 to 3.97; P for trend=0.02). The interesting point was that an inverse association was observed between cystatin C and prediabetes in quartile 2 (OR, 0.58; 95% CI, 0.37 to 0.89). In subgroup analysis, this inverse association in quartile 2 was significant in men and other race-ethnicities. In this study, the relative risk of subjects in the group with the fourth serum cystatin C levels (fourth=1.0 mg/L) for the presence of diabetic conditions was significantly decreased compared to the lowest group (first <0.8 mg/L) in the multivariable model (OR, 0.61; 95% CI, 0.39 to 0.97; $P=0.037$). Furthermore, this inverse association was also significant in men (OR, 0.48; 95% CI, 0.26 to 0.88; $P=0.019$). These results are compatible with the aforementioned study [6] but the reason for inverse association remains unclear.

Second, specific conditions such as severe anemia and diseases that change erythrocyte lifespan should be excluded. HbA1c has been proposed as a diagnostic tool to identify people with undiagnosed diabetes or those who are at risk of diabetes [8]. The HbA1c test is a very attractive test for the diagnosis of diabetes and prediabetes because it is easy, reproducible, and reflects the mean blood glucose levels over a period

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of time [8,9]. However, the HbA1c is affected not only by age and race but also by various diseases such as anemia, liver cirrhosis, and chronic kidney disease [10]. Analyzing the patients without diseases that can potentially affect HbA1c level would be more appropriate to evaluate the association between cystatin C and prevalence of diabetic conditions defined by HbA1c levels.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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