

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

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We sincerely appreciate the interests and comments on our study, “The association of serum cystatin C with glycosylated hemoglobin in Korean adults,” which was published in *Diabetes & Metabolism Journal* [1].


Cystatin C is an endogenous protein that is known to be affected little by age, race, and muscle mass [2]. It is not only used as a biomarker of renal function but also has positive associations with obesity, insulin resistance, hypertension [3,4], and cardiovascular mortality [5]. In this study with Korean adults, we demonstrated that serum cystatin C levels were significantly increased in subjects with diabetic conditions (prediabetes plus diabetes) compared with those who have normal glucose levels as defined by glycosylated hemoglobin (HbA1c) levels. Furthermore, our findings showed that higher levels of serum cystatin C were associated with increased prevalence of diabetic conditions, and we extended the positive association between cystatin C and the incidence of diabetes further to Asian as well as Western populations.

First, Dr. Kim pointed out the significant inverse associations, observed between cystatin C and prediabetes in quartile 2 (0.72 to 0.82 mg/L) compared with the lowest quartile (quartile 1, <0.72 mg/L) in men and other race-ethnicities in the study of Sabanayagam et al. [6], and between cystatin C and diabetic conditions in the group with the fourth serum cystatin C levels (1.0 mg/L) compared with the lowest group (first <0.8

mg/L) in the multivariable model of total subjects and men in our study [1]. These results would mainly be due to the lowest incidence of prediabetes in subjects in quartile 2 (quartile 1, 13.1%; quartile 2, 9.6%; quartile 3, 17.6%; quartile 4, 33.2%) in a previous study [6] and the lowest prevalence of diabetic conditions in the group with the fourth, especially in men (first, 35.7%; second, 29.5%; third, 29.6%; fourth, 26.0%; fifth, 39.5%) in our study [1]. Unfortunately, we also could not suggest a clear-cut reason for these variability in the incidence of diabetes among subjects outside the highest and the lowest cystatin C level groups, particularly in men or non-Western populations, indicating the need for further large-scaled studies.

Second, we agree with Dr. Kim’s opinion that HbA1c can be affected by variable conditions including anemia, liver cirrhosis, and chronic kidney disease [7] as well as age and race. Considering this point, we excluded those aged >70 years and those with liver disease or abnormal serum creatinine as described [1]. Moreover, the hemoglobin levels of total subjects were more than 10 g/dL in our data, and the effect of anemia may be negligible. It may be useful to use other markers, such as glycated albumin [8], that are known to be better diagnostic indices of glycemic control in future studies.

We would like to thank Dr. Kim for the interest in our study and thoughtful comments.

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CONFLICTS OF INTEREST

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

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