

COMMENTS AND RESPONSES

Association of 1,5-Anhydroglucitol and 2-h Postprandial Blood Glucose in Type 2 Diabetic Patients

Response to Stettler et al.

In their very elegant study, Stettler et al. (1) assessed the association between 1,5-anhydroglucitol (1,5-AG) and postprandial glucose during different time periods, varying from 3 days to 12 weeks long, in patients with type 2 diabetes. They found the strongest association during a 2-week period. Although the authors excluded patients with overt renal insufficiency or proteinuria, it is as yet unknown whether additional adjustments for markers of renal tubular function or dysfunction have had an impact on this association and, as such, should be included in the correlation analyses. 1,5-AG is a metabolically inert polyol that competes with glucose for reabsorption in the kidneys. The otherwise stable levels of 1,5-AG are rapidly depleted as blood glucose levels exceed the renal threshold for glucosuria. However, the renal threshold for glucosuria may change during the

course of the disease, and a lower renal threshold for glucose was reported in advanced diabetes (2,3). As a consequence, higher amounts of glucose will be delivered to the renal tubules, resulting in a lower reabsorption of 1,5-AG by the active transporters and, consequently, lower plasma 1,5-AG levels (1). This may lead to an overestimation of the postprandial glucose excursion. Serum 1,5-AG concentrations were significantly correlated with urinary albumin excretion in univariate analyses, whereas in multivariable analyses (adjusted for A1C, fasting plasma glucose, and N-acetylglucosaminidase), this association was of borderline significance (4). Therefore, adjustments for urinary albumin excretion in the multivariable analyses seem appropriate, with the restriction that albuminuria may not be sensitive enough to reflect early renal damage, including changes in renal threshold for glucosuria. Finally, a recent study in nondiabetic subjects showed a significant negative correlation of 1,5 AG with serum creatinine (5), indicating that adjustment for serum creatinine (or estimated glomerular filtration rate) is required.

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