Glycated Albumin: A new biomarker for monitoring metabolic progression of diabetes

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Abstract

One of the consequences of the metabolic progression of diabetes is kidney disease, being also a main cause of diabetes related morbidity and mortality. Therefore, earlier adoption of methods to estimate chronic kidney disease risks along with a more accurate glycemic index for patients with type 2 diabetes mellitus is highly desirable.

One of the widely used tubular injury markers is N-acetyl-β-D-glucosaminidase (NAG), a lysosomal enzyme of renal proximal tubular epithelial cells. One study demonstrated that the association between glycated albumin (GA) and uNAG excretion and observed that GA was significantly associated with uNAG excretion independent of other confounding factors. Consequently, this study suggest that GA can be a strong independent predictor of early renal tubular damage, beyond its role as a surrogate marker of glucose control (Huh et al., 2018).

The glucose and other sugars react spontaneously with free amino terminal residues of serum proteins, like albumin (the most abundant of serum protein). Glycated albumin (GA) levels increase in states of abnormally high glucose concentrations such as diabetes and can hence be used for assessing glucose control over a short to intermediate time frame (approximately 14-21 days, half-life of serum proteins (Danese et al., 2015).

Glycated albumin (GA) has been identified as a good biomarker because are not affected by changes in erythrocyte lifespan, measurement is not influenced by anemia or other conditions which invalidate HbA1c measurements (Wu et al., 2016). Several studies revealed the association of increased GA values with the presence of diabetic retinopathy, nephropathy, and cardiovascular

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complications; these findings also support the use of GA measurements in the diagnosis of diabetes (Danese et al., 2015; Wu et al., 2016).

Although further studies are needed to establish whether GA may complement (or even replace) conventional measures of glycemic status such as HbA1c, it is undeniable that GA is already helping the clinical management of patients with diabetes in whom HbA1C values are unreliable (Danese et al., 2015).

Keywords

Type 2 Diabetes mellitus; Early Diagnosis; Glycated Albumin

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