

Do Glycoalbumin Levels Preferentially Reflect Postprandial Glucose Excursions?

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To evaluate whether glycoalbumin (GA), which provides an integrated measure of plasma glucose over the preceding two weeks, better reflects changes in postprandial glucose excursions than HbA1c.

GA levels were assayed enzymatically (Lucica GA-L kit, Asahi Kasei Pharma Corporation) in baseline and one-year fasting plasma samples from 625 patients enrolled in the Treating-to-Target-in-Type 2 diabetes trial. This study randomised patients with suboptimal glycaemic control (HbA1c 7-10%) on maximally-tolerated metformin and sulfonylurea therapy to the addition of once-daily basal detemir, twice-daily biphasic aspart, or thrice-daily prandial aspart analog insulin. A mixed effects linear regression model was derived to explore the relationship of postprandial glucose rise with GA and HbA1c, having adjusted for fasting plasma glucose, treatment effects and possible centre effects.

Mean (SD) age was 61.7±9.8 years, weight 85.8±15.9 kg and median (IQR) diabetes duration 9 (6, 13) years. At one-year, mean HbA1c values were similar on biphasic (7.3±1.0%) and prandial (7.2±0.9%) insulin, but higher on basal insulin (7.6±1.0%, $P<0.001$). One-year GA values were also similar for biphasic (15.8±3.2%) and prandial (15.4±3.9%) insulin, but higher on basal insulin (16.7±3.4%) ($P<0.0001$).

Changes in fasting glucose and postprandial glucose over 1 year were associated significantly with concomitant changes in GA ($p<0.001$) and HbA1c ($p<0.001$), with significant differences between insulin assignments. At baseline and at one-year, postprandial glucose rises correlated to a greater extent with GA than HbA1c, by 15% and 17% and respectively, but GA only explained 4% more of the variations in postprandial glucose rises than HbA1c.

GA and HbA1c measures of glycation reflect postprandial glucose rises to a similar extent.