ORIGINAL ARTICLE

Interindividual and Intraindividual Variations in Postprandial Glycemia Peak Time Complicate Precise Recommendations for Self-Monitoring of Glucose in Persons with Type 1 Diabetes Mellitus

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Abstract

Background:

In glycemic control, postprandial glycemia may be important to monitor and optimize as it reveals glycemic control quality, and postprandial hyperglycemia partly predicts late diabetic complications. Self-monitoring of blood glucose (SMBG) may be an appropriate technology to use, but recommendations on measurement time are crucial.

Method:

We retrospectively analyzed interindividual and intraindividual variations in postprandial glycemic peak time. Continuous glucose monitoring (CGM) and carbohydrate intake were collected in 22 patients with type 1 diabetes mellitus. Meals were identified from carbohydrate intake data. For each meal, peak time was identified as time from meal to CGM zenith within 40–150 min after meal start. Interindividual (one-way Anova) and intraindividual (intraclass correlation coefficient) variation was calculated.

Results:

Nineteen patients were included with sufficient meal data quality. Mean peak time was 87 ± 29 min. Mean peak time differed significantly between patients ($p = 0.02$). Intraclass correlation coefficient was 0.29.

Conclusions:

Significant interindividual and intraindividual variations exist in postprandial glycemia peak time, thus hindering simple and general advice regarding postprandial SMBG for detection of maximum values.

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