Incidence and Clinical Characteristics of Oral Glucose Tolerance Test (OGTT)-induced Hypoglycemia during Diabetes Screening in High-risk Thai Patients

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Background: Hypoglycemia following OGTT during diabetes screening has been well described in patients with cystic fibrosis, post-bariatric surgery, and some impaired glucose tolerance. Exaggerated insulin secretion associated with increased incretin levels is regarded as a possible mechanism of reactive hypoglycemia in these patients. This paradox phenomenon in non-diabetic subjects is linked with higher future risk of developing diabetes and preclinical atherosclerosis as assessed by carotid intima–media thickness.

Objective: The aim of this study was to study the incidence and clinical characteristics of this phenomenon in healthy patients who underwent OGTT as a screening tool for diabetes.

Methods: A retrospective study of patients who underwent a three-point (fasting, 1-hour, and 2-hour) OGTT over an 11-year period (2007-2017) was conducted. Those with normal glucose tolerance with hypoglycemic 2-hour plasma glucose level (less than 70 mg/dL) after OGTT were identified. The clinical characteristics of patients, validated Thai diabetes risk score, and Thai cardiovascular risk score were compared with normal glucose tolerance patients.

Results: A total of 512 OGTT data during the study period were reviewed. Based on OGTT results, hypoglycemia following OGTT was observed only in 8 patients (1.6%). These groups of patients composed of 5 female and 3 male. The identified patients tended to be younger and more obese when compared with normal OGTT patients (mean age 42.0±12.5 years vs 50.4±12.7 years and BMI 26.9±5.3 kg/m2 vs 26.5±4.6 kg/m2). Regarding validated Thai diabetes risk score and Thai cardiovascular risk score, there was no difference between patients with entirely normal, non-hypoglycemic OGTT response and those with hypoglycemic response to the OGTT. However, the elevated 1-hour glucose following OGTT (≥ 155 mg/dL) was found in half of these patients.

Conclusion: OGTT-induced hypoglycemia in non-diabetic patients is a rare phenomenon with clinical significance. Cardiovascular risk score as assessed by validated Thai CV risk score is not significantly different from normal glucose tolerance patients without this phenomenon. Nonetheless, further prospective study should be done in order to clarify the exact pathogenesis and clinical significance of hypoglycemia encountered during OGTT procedure.

Keywords: OGTT, Induced, Hypoglycemia