Clinical Utility of Oral Glucose Tolerance Test (OGTT) as Screening Tool to Diagnose Dysglycemic Status in High-risk Thai Patients

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Background: A1C is proposed as a diagnostic tool to detect individuals at high risk for developing type 2 diabetes mellitus. However, low sensitivity and various confounding effects of A1C assay might limit its clinical utility. Moreover, elevated 1-hour OGTT (≥ 155 mg/dl) in normal glucose tolerance (NGT) subjects has recently been studied as a potent risk factor for developing future type 2 diabetes and worse cardio-metabolic risks.

Objective: This study aimed to evaluate correlation between OGTT and A1C as a screening tool in the identification of glycemic spectrum in high-risk Thai.

Materials and Methods: A retrospective data of high-risk patients who underwent a three-point (fasting, 1-h, and 2-h) OGTT over an 11-year period (2007-2017) was reviewed and the agreement between the classification of pre-diabetes and diabetes defined by OGTT and A1C was evaluated.

Results: Data of 512 OGTT patients (females 60.5%, mean age 50.3±12.7 years, BMI 26.5±4.6 kg/m²) were reviewed. Based on OGTT results, NGT was found in 220 patients (43.0%), IGT in 191 patients (37.3%), and diabetes in 101 patients (19.7%). In subjects with NGT, elevated 1-hour OGTT (≥ 155 mg/dl) was noted in 50.9% and associated with Thai CV risk score (r=0.253, p-value <0.001). There was poor agreement between the classification of pre-diabetes and diabetes defined by OGTT criteria and A1C criteria (Kappa 0.154 and 0.306, respectively). Compared to the OGTT criteria in diagnosis of diabetes, the sensitivity of A1C ≥ 6.5% was only 31.7%, but with high specificity of 93.9%. While diabetes prevalence classified by OGTT was two times higher than those defined by A1C (19.7% versus 11.1%), pre-diabetes classified by OGTT criteria (IGT) was approximately equal to pre-diabetes classified by criteria (37.3% versus 45.9%). Using OGTT as diagnostic criteria for diabetes, the prevalence of diabetes was observed in 25% of patients with very high-risk category (score ≥ 11/17) from previously validated Thai diabetes risk score.

Conclusion: The utility of A1C as a screening tool for dysglycemic status in high-risk Thai patients is much inferior to OGTT. Previously validated Thai diabetes risk score could be used as a self-evaluation tool in selecting high-risk patients to schedule for OGTT procedure. The assessment of 1-hour OGTT helps identify a subgroup of high-risk individuals who remain unidentified by traditional measures.

Keywords: Oral Glucose Tolerance Test (OGTT), Dysglycemic Status, High-risk Thai Patients