HIGHER GLYCEMIC EXCURSION OF NEWLY DIAGNOSED YOUTH-ONSET TYPE-2 DIABETES MELLITUS MAY BE RELATED TO ß-CELL SECRETORY CAPACITY AND NOT TO INSULIN RESISTANCE

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Background: Youth-onset type 2 Diabetes mellitus (T2DM) often presents with high glycemic values. To see the plasma glucose and hemoglobin A1c (HbA1c) at diagnosis and their relationship with ß-cell secretory capacity and insulin resistance in phenotypic T2DM of young. Methods: This cross-sectional study enrolled 72 newly-diagnosed youth-onset phenotypically T2DM [age range 19-29, median 27, inter-quartile range (IQR) 24-29 years; male 32 (44.4%), female 40 (55.6%)] during March-December 2022 in Endocrinology department, BSMMU. The secretory capacity of ß-cell was estimated by fasting C-peptide (measured by chemiluminescence immunoassay) and insulin resistance by calculating visceral adiposity index (VAI) and serum triglyceride/high-density lipoprotein (TH/HDL) ratio. Results: Median HbA1c, fasting plasma glucose (FPG), and 2h plasma glucose (2h-PG) of the participants were 8.7% (IQR 6.7-11.0), 10.8 (IQR 7.1-16.3) mmol/L and 18.0 (IQR 13.1-24.3) mmol/L respectively. All glycemic values were negatively correlated to fasting C-peptide (HbA1c: r=-0.437, p<0.001; FPG: r=-0.479, p<0.001; 2h-PG: r=-0.456, p<0.001), body mass index (HbA1c: r=-0.546, p<0.001; FPG: r=-0.550, p<0.001; 2h-PG: r=-0.505, p<0.001) and waist circumference (HbA1c: r=-0.422, p<0.001; FPG: r=-0.399, p=0.001; 2h-PG: r=-0.361, p=0.002). There were no significant correlations of any glycemic values to VAI (HbA1c: r=-0.037, p=0.757; FPG: r=0.075, p=0.532; 2h-PG: r=0.136, p=0.254) or TG/HDL ratio (HbA1c: r=0.036, p=0.764; FPG: r=0.144, p=0.228; 2h-PG: r=0.196, p=0.099). In a linear regression model adjusted for VAI, each nmol reduction of C-peptide was associated with 0.49 (95%CI 0.19-0.79) rise of HbA1c% (p=0.002). Conclusion: Higher glycemic excursion at diagnosis of youth-onset T2DM is related to lower ß-cells reserve and lower obesity indices but not to insulin resistance.

Keywords: Higher glycemic excursion, youth-onset Type-2 Diabetes Mellitus, ß-cell secretory capacity, insulin resistance.

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