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Cardiometabolic Risk Factors in Type 2 Diabetes Persons Evaluated by Continuous Glucose Monitoring

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Abstract

Background and Aims: Diabetes evolution is influenced both by glucose status and cardiovascular risk, among many factors. The relation between these two components is not always investigated in detail. The study evaluated the relation between cardiometabolic risk factors(CMRF) and glucose parameters evaluated by continuous glucose monitoring(CGM) in persons with type 2 diabetes(T2D).

Materials and Methods.30 persons with T2D(8 women,22 men,insulin-treated-14,oral-treatment-16)were assessed by CGM. Mean age-56.59years, mean diabetes duration-11.43 years, mean insulin-therapy duration-5.71years.**CMRF**: body weight, BMI, abdominal, circumference(AC), physical activity, smoking, alcohol consumption, lipid profile(total cholesterol-T-chol, calculated LDLc, HDLc, triglycerides-TG), SBP, DBP, personal and family history of cardiovascular diseases(CVD), family history of diabetes. **Glucose parameters**: glycated haemoglobin A1c (A1C), glucose variability(GV), mean amplitude of glucose excursions (MAGE)(Monnier et al(2006)), number of glucose values (NGV, time spent), area under the curve(AUC, glucose exposure), mean glucose values (MGV, glucose amplitude) on **domains**–hypoglycemic(<70mg/dl), intermediate(70-180mg/dl), hyperglycemic(>180 mg/dl), optimal(90-130mg/dl).

Results. Weight was inversely correlated with GV and MAGE.SBP increased with diabetes duration and insulin-therapy duration.Persons with SPB>130 mmHg had lower percent NGV and AUC<70,higher total,diurnal and nocturnal AUC,higher glucose amplitude(MGV).LDLc decreased with increasing insulin-therapy duration.TG values were directly correlated with diurnal AUC and inversely related to nocturnal AUC.HDLc was directly correlated with AUC 70-180.Persons with family history of diabetes had higher time spent(NGV) and total AUC<70 mg/dl. Persons with family history of CVD had lower A1C.The other assessed data were not significant, even if the direct relation between worse cardiometabolic parameters and hyperglycemic exposure was close to statistical significance.

Conclusions.SBP was directly correlated with total glucose status and inversely related with hypoglycemia.TG and HDLc were directly correlated with glucose status and worsened with age(HDLc).Awareness of familial RF induced a better glucose control with a higher exposure to hypoglycemia.

Keywords: cardiometabolic risk factors, type 2 diabetes, continuous glucose monitoring

Abbreviations: AUC - area under the curve, MAGE - mean amplitude of glucose excursions, GV - glucose variability, MGV - mean of glucose values, NGV - number of glucose values

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Ethical approval: Participants provided written informed consent. Research protocols and procedures were further evaluated and fulfilled the ethical standards of the Helsinki Declaration 2013 and were approved by the Ethics Committee of Diamed Obesity SRL Company (meeting minutes No. 2 of February 25, 2022). Time of data collection: 2006-2007.

Conflict of Interest: The authors declare that they have no conflict of interest.