

# **BLOOD PRESSURE DIPPING STATUS AFFECTS THE RELATIONSHIP BETWEEN GLUCOSE FLUCTUATION AND HEART RATE VARIABILITY IN TYPE 1 DIABETIC PATIENTS**

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Cardiac autonomic neuropathy is a frequent complication of type 1 diabetes (DM1). However, none of the previous study has assessed the inter-relationship between glucose fluctuation, circadian blood pressure rhythm and features of heart rate variability (HRV).

**The aim:** to test the hypothesis that in patients with longstanding DM1 the relationship between HRV and glucose fluctuation is influenced by blood pressure diurnal profile.

**Methods:** We examined 42 subjects with longstanding (>20 years) history of DM1 (without cardiovascular disease, including hypertension). In all patients, simultaneous 24-hour continuous glucose monitoring, ABPM and Holter electrocardiographic recording were performed. Subjects were divided into two groups according to dipping pattern (dippers n=20, non-dippers n=22).

**Results:** Both groups of patients did not differ with respect to duration of hypo-, normo- and hyperglycaemia, while time- and frequency domain HRV parameters were significantly lower in non-dippers ( $p<0.05$ ). Several HRV parameters including SDANN and LF spectrum power were positively related to duration of hypoglycaemic episodes both in dippers and non-dippers ( $p<0.05$ ). However, other HRV parameters were associated with glucose fluctuation only in non-dippers. Time of hypoglycaemia was positively related to pNN50, rMSSD, diurnal and night HF spectrum power, in the presence of its negative correlations with 24-hour and day VLF% ( $p<0.05$ ); time of hyperglycaemia was negatively related to pNN50, rMSSD, 24-hour, day and night ULF, VLF and HF spectrum power ( $p<0.05$ ).

**Conclusions:** In non-dippers with longstanding DM1, HRV is lower but more sensitive to glucose fluctuation than in dippers.