Study of microcirculatory impairment in type 2 diabetic patients with symptoms of peripheral neuropathy

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Aim: Microangiopathy and neuropathy are late and severe complications of diabetes mellitus. Our aim was to examine the connection between neuropathy and microcirculatory disorder in type 2 diabetic patients in the mirror of metabolic state.

Methods: In our study 50 patients with type 2 DM and symptoms of neuropathy were enrolled. The microcirculatory impairment was examined by Laser-Doppler flowmetry. Provocation probe, the veno-arterial reflex (VA) was implicated. The venoarterial reflex is is the decline in limb blood flow in the dependent position due to an increase in pre-capillary vascular resistance. To reify neuropathy, electroneurography (ENG) has been performed. Laboratory tests included lipid parameters and Hg A1C level. Examinations were done in age and sex matched control group.

Results: During VA, decline in blood flow was significantly higher in the control group (78% vs. 31,8%; p<0,001). The results proved micrirculatory impairment. ENG confirmed peripheral neuropathy in every patient. Significant correlation could be detected between VA and triglyceride (R=0,35, p=0,015) and Hg A1C (R=0,322, p=0,024). There was no significant correlation between the VA and average disease course or severity of neuropathy.

Conclusions: Our results show that VA is an excellent method to detect both neuropathy and microangiopathy in DM. Because of the relationship between the VA and glycemic control, the VA could be suitable for monitoring the effects of new therapies in DM.