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Decreased vibration perception threshold in type 1 but not type 2 patients with proliferative retinopathy

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Microvascular triad, with its most easily investigable part peripheral neuropathy, is rarely described all together, especially with advanced eye disease. **The aim** of this study was to compare the presence of large fiber diabetic neuropathy between 18 type 1 patients (T1DM) with proliferative diabetic retinopathy (PDR) and 19 aged- and diabetes duration matched type 1 controls without PDR an also between 24 type 2 patients (T2DM) with PDR and 20 diabetes duration matched controls. Vibration perception threshold (VPT) with semiquantitative tuning forks C128 (grade 0-8) and ankle reflexes were measured in both type 1 and type 2 patients with PDR and controls. **Results**: In T1DM, VPT was significantly lower in patients with PDR compared with controls (4.7±1.9 vs. 7.3±0.73, $p<0.001$), and ankle reflexes were significantly higher (3.56±1.04 vs. 1.9±1.74). In contrast, in T2DM, VPT was not significantly different between patients with PDR and controls (5±2.8 vs. 6.1±1.6, p=0.13). In T1DM VPT was negatively correlated with age (r=-0.29, p=0.08), body height (r=-0.30; p=0.069), body weight (r=-0.37, p=0.02), proteinuria (r=-0.52, p=0.004), creatinin (r=-0.50, p=0.0016), albuminemia (r=-0.41, p=0.01), fibrinogen (r=-0.39, p=0.018) and triglycerides (r=-0.32, p=0.057). After multiple regression analysis age, proteinuria and creatinin have remained significant. In T2DM VPT was negatively correlated with duration of diabetes and duration of insulin therapy (r=-0.30, p=0.05; r=-0.33, p=0.03). In T2DM without DPR macrovacular complications (MC) were significantly more frequent than among T2DM with PDR (X^2 5.88, p=0.015). **Conclusion**: Decreased VPT in T1DM with PDR is mainly caused by the hyperglycemia and/or insulin deficiency. Increased incidence of MC in T2DM without retinopathy could be explained by protective effects of insulin secretion on microvascular complications but making some patients prone to the development of a macrovascular one.