EPIDERMAL NERVE FIBRE DEPLETION IN SIMULTANEOUS PANCREAS AND KIDNEY TRANSPLANT PATIENTS: NO CHANGE AT FOLLOW-UP AFTER 18 MONTHS OF NORMOGLYCEMIA

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Objectives: Skin biopsy with epidermal nerve fibre (ENF) counts may be used to analyze possible nerve regeneration in patients with type 1 diabetes mellitus (DM) following simultaneous pancreas and kidney transplantation (SPK). We report on the results of lower limb ENF counts in normoglycemic SPK patients at 18 months follow-up.

Methods: Skin biopsies were performed using a 3-mm punch from lower thigh and upper calf areas of 16 SPK recipients (of mean ±SD age 46±8 years; DM duration 28±10 years) at the time of SPK and at 18±4 months post-transplant. Fourteen healthy sex- and age-matched controls (C) were also examined. After fixation and freezing, 40 µm sections were stained using rabbit polyclonal antibody to the panaxonal marker PGP 9.5 followed by mouse anti-rabbit IgG antibody conjugated with rhodamine. Samples were imaged with a digital camera, mounted on a microscope, equipped for fluorescence. The average number of ENF per mm length of epidermis was derived.

Results: Excellent metabolic control ($HbA1_c$ IFCC values: SPK 3.8±0.4 vs. C 3.8±0.4 %; $p>0.05$) and adequate kidney graft function (P-creatinine 111±24 µmol/l) were achieved in SPK recipients. Severe depletion of ENF was present in baseline skin biopsies from SPK recipients (SPK vs. C thigh: 1.6±3.1 vs. 11.4±4.2; calf: 0.8±1.9 vs. 8.0±3.0 ENF/mm; $p<0.001$) with total ENF absence in thigh and calf samples of 8 and 12 SPK recipients, respectively. No significant change was seen at follow-up (thigh: 0.9±2.1; calf: 0.4±1.1 ENF/mm; $p>0.05$ vs. baseline) with absence of ENF fibres in 11 thigh and 10 calf biopsies.

Conclusions: Lower limb epidermal nerve fibre depletion was not improved following establishment of normoglycemia in pancreas and kidney transplant recipients. Although prolonged follow-up is clearly needed, these preliminary results confirm the presence of structural, poorly reversible changes in advanced diabetic neuropathy.

Supported by the NR7929-4 grant, Internal Grant Agency, Czech Ministry of Health