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Sudomotor dysfunction is associated with increased mortality in patients with chronic kidney disease, with or without diabetes mellitus

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Background and aim: Little is known on the association of sudomotor dysfunction with mortality in patients with chronic kidney disease. Therefore, we carried out a prospective 1-year study to examine this issue. **Materials and methods:** We included 153 patients as follows: 97 from dialysis unit [28 with diabetes (DM) and diabetic nephropathy; 37 with nephroangiosclerosis, (NA), 18 with glomerulonephritis (GN), 14 with other conditions (O)]; 32 with type 2 DM and creatinine clearance (CrCl) 30-50 ml/min; and 24 transplanted patients with CrCl>30 ml/min (of these 8 had DM). Somatic sensory neuropathy was documented using the Neuropathy Disability Score (NDS) and the vibration perception threshold (VPT). Sudomotor dysfunction was evaluated by time to colour change of the Neuropad[®] test. Peripheral vascular disease (PAD) was diagnosed on the basis of Ankle-Brachial Index (ABI) measurement, abnormal waveforms or history of PAD. Investigations were performed twice: 1 year ago and this year. For patients who had died, we only used the data from the first examination. **Results:** Among DM patients, 13 exhibited IWGDF risk level 3 diabetic foot pathology (3 critical ischaemia, 3 Charcot foot, 2 ulcer, 2 minor and 3 major amputation). There was 1 patient with critical ischaemia in the NA group and 1 in the GN group. In the 12-month period, 14 patients on haemodialysis had died: 9 in the NA group (mean age 66.8±11 years), 4 among DM (mean age 59±11.9 years), and 1 in the O group (73 years). In univariate analysis, the presence of IWGDF risk 3 level was related to dialysis treatment [odds ratio (OR): 1.18, 95% Confidence Interval (CI): 1.09-1.29, p=0.02], PAD (OR: 0.55, 95% CI: 0.47-0.64, p=0.01), VPT (OR: 12.6, 95% CI: 2.7-58.1, p<0.001), sensory loss (OR: 5.48, 95% CI: 52.9-5682, p<0.001). In univariate analysis, death was related to age (OR: 1.06, 95% CI: 1-1.11, p=0.02), dialysis treatment (OR: 1.17, 95% CI: 1.08-1.27, p=0.003), VPT (OR: 3.1, 95% CI: 0.99-9.8, p=0.04), loss of ankle reflexes (OR: 1.7, 95% CI: 1.1-2.8, p=0.007), and abnormal Neuropad response (OR: 1.1, 95% CI: 1.03-1.19, p=0.004). In multivariate analysis, only abnormal Neuropad test remained significant (p<0.05). Time to complete Neuropad colour change was 26.4±8.2 minutes in patients who had died and 17.8±9.8 minutes in those remaining alive on dialysis or pre-dialysis renal failure (p=0.002). **Conclusions:** These findings indicate that sudomotor dysfunction is associated with increased mortality in patients with chronic kidney disease, with or without DM.

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