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Prevalence of diabetic foot in patients with end-stage renal disease on dialysis therapy

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Aim: To study prevalence of diabetic foot complications in diabetic patients on dialysis therapy and evaluate the role the haemodynamic changes during dialysis procedure on arterial blood flow in lower extremities.

Methods: We studied 83 dialysis patients, mean age 49 (29-75) yrs, 45 of them had diabetes mellitus (24 on haemodialysis (HD), 21 on peritoneal dialysis (PD)). 38 non-diabetic patients (20 on HD, 18 - on PD) constituted a control group. Mean diabetes duration was 23 (4-38) yrs; 60% of patients had type 2 diabetes. Mean PD duration was 3,25 yrs, HD duration 4,5 yrs.

Diabetic polyneuropathy was diagnosed according to NDS scale. Vascular status was assessed by Doppler with ABI and toe pressure (pole-test) measurements.

Results: Polyneuropathy was diagnosed in 88% of patients with diabetes, and in 30,5% of patients without diabetes ($p < 0,05$). Charcot osteoarthropathy was detected in 2 diabetic patients (4,4%): in 1 patient on HD (acute stage) and in 1 on PD (quiescent stage).

Peripheral vascular disease (PVD) was closely associated with diabetes mellitus (24% of patients in diabetic group, 0% in control group of patients). Diabetic ulcers took place in 15,5 % of all patients with DM. 4,4% of patients had foot ulcers history before start of dialysis therapy. Diabetic ulcers were diagnosed more frequently in patients on HD than on PD. In HD subgroup 5 of 24 patients had ulcers: 1 neuropathic and 4 neuroischemic. In PD subgroup – only 2 of 21 patients: 1 neuropathic and 1 neuroischemic. PVD was more frequently diagnosed in HD group despite the fact that blood lipid measurements were worse in PD group. We suppose that it is a result of hemodynamic fluctuations during HD procedure. In our study 10 patients from 24 on HD and only 1 from 21 on PD had significant fall of systemic and regional arterial pressure. In 4 of these patients (3 in HD and 1 on PD) blood pressure reached critical ischemia level (in tibial arteries down to 55 mm Hg, in toe artery down to 30 mm Hg), and all these patients had neuroischemic ulcers.

Conclusions: 1. Diabetic patients on chronic dialysis therapy have high risk of diabetic foot. 2. Transient intra- and postdialysis arterial hypotension which is frequently observed in HD group can cause secondary critical limb ischemia and may be an additional risk factor of diabetic foot.