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Predictive value of clinical signs of peripheral autonomic neuropathy in regard to future foot ulcerations in a type 2 diabetes population. Lars Kärvestedt, Kerstin Brismar. Dept. of Molecular Medicine and Surgery, Karolinska Institutet, Stockholm, Sweden.

Background: Peripheral autonomic neuropathy (PAN) is recognised in international consensus statements as risk factor for diabetic foot complications. Recognized signs of PAN are dry skin, cracks, warm skin, loss of hair and oedema. Data are scarce regarding the prospective value of these clinical signs when observed at foot examination. Aims: To test the predictive value of signs of PAN at foot examination in regard to future foot ulcerations (FU) in a well defined population with type 2 diabetes. Method: In a geographically defined population, aged 40-70 years, we investigated 156 type 2 diabetic subjects, 95% Caucasian, mean age 61.7 ± 7.2 years, duration of diabetes 7.0 ± 5.7 years and HbA1c $7.3 \pm 2.4\%$ (Mono-S 6.4%) at baseline and 5 years later. At follow-up 101 subjects were included. Non-participants at follow-up were; unwilling to participate $n=16$, deceased $n=13$, moved out of the area $n=16$ and unreachable $n=10$. Foot examination followed a protocol based on international consensus which has been in use at the Karolinska University Hospital since 1993. Result: At baseline 11/156 (7%) subjects were affected by past or present FU. Follow-up included 97 subjects without a history of FU at baseline. Nine of these subjects (9%) were affected at follow-up, one of these lacked a baseline foot examination as did 7 subjects that did not develop FU. No significant difference was observed between those with vs. without new FU at follow-up in regard to age, diabetes duration and glucose control as judged by level of fP-glucose and HbA1c at baseline. Subjects that developed FU had higher vibration perception threshold 26.6 ± 11.0 vs. 19.7 ± 8.3 (V), $p=0.04$, and more often a pathological mono-filament 38% vs. 7%, $p=0.03$, but not a pathological tuning-fork 38% vs. 21%, $p=0.4$, with vs. without new FU respectively. As described in the table only dry skin was associated with future FU.

Sign	with FU n=8		without FU n=81		p	Sign/s	with FU n=8		without FU n=81		p
	n	%	n	%			n	%	n	%	
Dry skin	7	88	36	44	0.03	PAN \geq 1	8	100	60	74	0.1
Warm skin	3	38	38	47	0.7	PAN \geq 2	6	75	33	41	0.1
Cracks	1	13	6	7	0.5	PAN \geq 3	1	13	11	14	1.0
Loss of hair	4	50	25	31	0.4	PAN=4	0	0	2	2	1.0

fu=foot ulceration, p values are Fischer exact two tailed test.

Conclusion: Dry skin was the only sign of PAN in this study that predicted future foot ulceration. Adding of several signs in a score failed to improve the predictive value.