

Increased accumulation of skin advanced glycation end-products precedes and correlates with clinical manifestation of diabetic neuropathy.

- [Meerwaldt R](#),
- [Links TP](#),
- [Graaff R](#),
- [Hoogenberg K](#),
- [Lefrandt JD](#),
- [Baynes JW](#),
- [Gans RO](#),
- [Smit AJ](#).

Department of Medicine, University Hospital Groningen, The Netherlands.
r.meerwaldt@chir.azg.nl

AIMS/HYPOTHESIS: The accumulation of AGE is related to the progression of the renal, retinal and vascular complications of diabetes. However, the relationship with diabetic neuropathy remains unclear. We recently showed that skin autofluorescence, measured non-invasively with an AutoFluorescence Reader (AFR), could be used to assess skin AGE accumulation. We evaluated the relationship between skin autofluorescence and the severity of diabetic neuropathy. **MATERIALS AND METHODS:** Skin autofluorescence in arbitrary units (AU) was assessed in 24 diabetic patients with a history of neuropathic foot ulceration (NP(+)), 23 diabetic patients without clinical neuropathy (NP(-)) and 21 control subjects, using the AFR. Arterial occlusive disease was excluded in all. The severity of foot ulceration was assessed by the Wagner score. Peripheral nerve function was assessed by neurography, measuring motor and sensory nerve conduction velocity and amplitude of the median, peroneal and sural nerves. Heart rate variability (HRV) and baroreflex sensitivity (BRS) were measured by Finapres to assess autonomic nervous function. **RESULTS:** Autofluorescence was increased in NP(-) compared with control subjects. In NP(+) patients, autofluorescence was further increased and correlated with the Wagner score. Autofluorescence correlated negatively with nerve conduction velocity and amplitude, HRV and BRS in both NP(+) and NP(-) groups. Autofluorescence correlated with age, diabetes duration, mean HbA(1)c of the previous year, serum creatinine level, presence of microalbuminuria and severity of diabetic retinopathy. **CONCLUSIONS/INTERPRETATION:** Skin autofluorescence correlates with the severity of peripheral and autonomic nerve abnormalities in diabetes, even before being clinically manifest. The AFR may be a convenient and rapid clinical tool for assessing risk of progression of long-term diabetic complications.

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