Diabetes

Non invasive skin autofluorescence test shows promise

An immunofluorescence test may be able to predict new onset diabetes, cardiovascular disease (CVD) and death, a study from the Netherlands has shown.

A total of 72,880 participants, aged 18-90 years, from The Dutch Lifelines Cohort took part in the study. None had diabetes or CVD at the outset. All had a validated baseline skin autofluorescence value.

At baseline and follow-up examination, study participants completed a self-administered questionnaire on medical history and health behaviour.

The skin autofluorescence test detects advanced glycation end products (AGEs) accumulated in the skin. Skin autofluorescence was measured non invasively using an AGE reader. Mortality statistics were obtained from a municipal database. Average follow-up was four years.

Overall, 1,056 participants (1.4%) developed type 2 diabetes, 1,258 developed CVD (1.7%) and 928 (1.3%) died.

In almost every age group, skin autofluorescence values were significantly higher in those who suffered an event (the composite outcome of incident diabetes, CVD or death) compared with those who remained event free ($P < 0.0001$).

Skin autofluorescence score was significantly associated with the composite outcome and with mortality in all age groups.

However, for incident type 2 diabetes in participants aged ≤ 35 and those between 51 and 60 years no significant association was seen.

For CVD, there was no significant predictive value in the lowest age group probably because of the low number of events.

Skin autofluorescence predicted the composite outcome independent of conventional risk factors such as age, sex, waist circumference, the presence of metabolic syndrome, smoking, fasting glucose and/or HbA_{1c}.

The participants were of Western European origin so the findings may not be applicable to other ethnic groups.

It is known that AGEs accumulate in patients who smoke and who have poorly controlled diabetes, but this study suggests that the non invasive detection of these compounds could be a validated screening tool.

The study authors conclude:
'This is the first prospective study in the general population to show the predictive value of skin autofluorescence for incident type 2 diabetes, CVD and mortality.
'A longer follow-up of Lifelines participants will allow further validation and will expand the present findings.'

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van Waateringe RP, Fokkens BT, Slagter SN et al. (2018). Skin autofluorescence predicts incident type 2 diabetes, cardiovascular disease and mortality in the general population. *Diabetologia* 2018 Nov 21. doi: 10.1007/s00125-018-4769-x. [Epub ahead of print]

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