Fingerprints: can poroscopy be useful in diabetes research?

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Key points

- To our knowledge, research linking pesticides and human diabetes in India has not been explored
- Such research would be novel, both from the perspective of identifying a potential new health effect related to pesticide exposure and opening new avenues in the prevention of diabetes
- Our pilot study will hopefully open the door for more research to explore the association between environmental pollutants and diabetes

behaviour. The diagnosis of new hypertension was based on two recordings half an hour apart due to time constraints.

In conclusion, allowing for the above limitations, our pilot study raises valid research questions on the association between pesticide use and diabetes. A strong study design with good control of confounding factors will testify to this association.

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Declaration of interests

There are no conflicts of interest declared. Funding source: none.

References

1. Gillett M, *et al.* Non-pharmacological interventions to reduce the risk of diabetes in people with impaired glucose regulation: a systematic review and economic evaluation. *Health Technol Assess* 2012;16(33):1–236.
2. Wheeler E, Barroso I. Genome-wide association studies and type 2 diabetes. *Brief Funct Genomics* 2011;10(2):52–60.
3. Swaminathan K. Pesticides and human diabetes: a link worth exploring? *Diabet Med* 2013;30(11): 1268–71.
4. Tomar LR, *et al.* Serum organochlorine pesticide levels in patients with metabolic syndrome. *Indian J Endocrinol Metab* 2013;17(Suppl 1):S342–4.
5. Rahimi R, Abdollahi M. A review on the mechanisms involved in hyperglycemia induced by organophosphorus pesticides. *Pesticide Biochem Physiol* 2007;88(2):115–21.
6. Swaminathan K, *et al.* Diabetic ketoacidosis: an uncommon manifestation of pesticide poisoning. *Diabetes Care* 2013;36(1):e4.
7. Mostafalou S, Abdollahi M. The role of environmental pollution of pesticides in human diabetes. *Int J Pharmacol* 2012;8(2):139–40.
8. Montgomery MP, *et al.* Incident diabetes and pesticide exposure among licensed pesticide applicators: Agricultural Health Study, 1993–2003. *Am J Epidemiol* 2008;167(10):1235–46.
9. Zaman FA, *et al.* Glucose indices, frank and undetected diabetes in relation to hypertension and anthropometry in a South Indian rural population. *Indian J Public Health* 2011;55(1):34–7.
10. Anjana RM, *et al.*; ICMR–INDIAB Collaborative Study Group. Physical activity and inactivity patterns in India – results from the ICMR-INDIAB study (Phase-1) [ICMR-INDIAB-5]. *Int J Behav Nutr Phys Act* 2014;11(1):26.
11. Macfarlane E, *et al.* Dermal exposure associated with occupational end use of pesticides and the role of protective measures. *Saf Health Work* 2013;4(3):136–41.
12. Sjöberg Lind Y, *et al.* Persistent organic pollutants and abnormal geometry of the left ventricle in the elderly. *J Hypertens* 2013;31(8):1547–53.
13. Calore EE, *et al.* Morphometric studies of cardiac myocytes of rats chronically treated with an organophosphate. *Ecotoxicol Environ Saf* 2007;66(3):447–50.
14. Smith EG, Gordon CJ. The effects of chlorpyrifos on blood pressure and temperature regulation in spontaneously hypertensive rats. *Basic Clin Pharmacol Toxicol* 2005;96(6):503–11.

Letter

Fingerprints: can poroscopy be useful in diabetes research?

Sir, I read with great interest Yohannes *et al.*'s article discussing the use of dermatoglyphics as a diagnostic aid and early preventive tool in diabetes.[1]

Fingerprint details are classified according to three different levels. Level 1 includes the basic fingerprint patterns (e.g. loop, whorl, arch, accidental) and ridge flow; Level 2 includes Galton characteristics (e.g. ridge bifurcations, ridge endings); and Level 3 comprises the fine features of the ridge (e.g. sweat pores, ridge width, shape, break etc).[2]

Poroscopy is the scientific study of number, shape (square, triangle, oval, round etc), size, type (opening on both ends, open on one end or both ends closed), and relative position of the pores on the friction ridge. Almost all studies have assessed Level 1 details in diabetes patients. However, Locard[3] states that sweat pores (Level 3) maintain the triple characteristics of immutability, variety and perpetuity – which permit personal identification with a high degree of accuracy and reliability. The use of poroscopy as a diagnostic aid or screening tool in diseases is scarce in the literature.

In my view, poroscopy can be used as a diagnostic aid or screening tool in diabetes as well as in other diseases that have a possible pre-natal origin. A proper and accurate method of fingerprint recording is vital for examining poroscopic features. There are several possible confounders associated with the commonly-used ink and paper method, e.g. the paper quality, type of ink, and pressures applied during recording of ink prints. These confounders may alter the shape, type, size and number of the pores in a given area. Thus, the researcher must address all these related issues when designing a study.

As an alternative to the ink method, modern instruments – e.g. portable high-resolution digital microscope or stereomicroscope – can be used to examine or record pores. These methods provide the additional advantage of spot examination of the fingerprint pores of diabetes patients – even during the busy clinic.

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Declaration of interests

There are no conflicts of interest declared. Funding source: none.

References

1. Yohannes S, *et al.* Dermatoglyphics in diabetes: a prospective diagnostic aid and early preventive tool. *Pract Diabetes* 2015;32:50–51a.
2. Jain A, *et al.* Pores and ridges: high-resolution fingerprint matching using Level 3 features. *IEEE Trans Pattern Anal Mach Intell* 2007;29:15–27.
3. Locard E. Les pores et l'identification des criminals. *Biologica* 1912;2:357–65.

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