



## Artifactual hypoglycaemia in a patient with scleroderma and Raynaud's phenomenon

**To the Editor:** A 52-year-old woman was referred to our emergency centre with a 1-day history of diarrhoea. The referring clinician noted that the patient was hypoglycaemic and that finger-prick glucose levels remained low, despite numerous intravenous boluses of 50 mL 50% dextrose solution. On presentation to our centre, the patient was alert and co-operative, with a normal mental state. Her vital signs were within normal limits, but she was found to have concomitant persistent hypoglycaemia ( $-2.9$  mmol/L) on a point-of-care glucometer, in the absence of hypoglycaemic symptoms.

On clinical evaluation, the patient had features of systemic sclerosis. She also had sclerodactyly (skin thickening of the fingers distal to the metacarpophalangeal joints) and bilateral Raynaud's phenomenon. The patient did not have the classic sympathetic and neuroglycopenic symptoms that accompany hypoglycaemia and, therefore, did not satisfy Whipple's triad. Whipple's triad confirms true hypoglycaemia and includes the following criteria: typical symptoms of hypoglycaemia, with low plasma glucose measured at the time of the symptoms, and relief of these symptoms when the glucose is raised to a normal level.<sup>[1]</sup> Clinically relevant hypoglycaemia is defined as a blood glucose  $<3.0$  mmol/L, while levels  $<3.9$  mmol/L should be regarded as a cautionary signal.<sup>[2]</sup> Plasma glucose levels measured at the same time as point-of-care glucose levels were normal.

The mechanism of artifactual hypoglycaemia can be explained by progressive obliteration of the capillary microcirculation; therefore, the blood flow in the utmost distal parts of the fingers becomes compromised, which leads to false low readings on glucometers.<sup>[3,4]</sup> Clinicians should be alert to other clinical states, such as cardiac diseases with peripheral cyanosis, peripheral vascular disease and hypoperfusion due to shock, which are commonly observed in emergency centres. These conditions are also associated with an impaired capillary flow and subsequent artifactual hypoglycaemia.<sup>[3]</sup>

This case highlights the importance of clinical examination and early identification of artifactual hypoglycaemia, which can prevent unnecessary treatment and possible iatrogenic complications.

### Ridwaan Osman

*Department of Emergency Medicine, Khayelitsha Hospital, Cape Town, South Africa*

### Elaine Erasmus

*Department of Emergency Medicine, Khayelitsha Hospital, and Division of Emergency Medicine, Department of Family and Emergency Medicine, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa*

### Sa'ad Lahri

*Department of Emergency Medicine, Khayelitsha Hospital, and Division of Emergency Medicine, Department of Family and Emergency Medicine, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa*  
*slahri7@gmail.com*

### Farzana Moosajee

*Division of Rheumatology, Department of Medicine, Faculty of Medicine and Health Sciences, Tygerberg Hospital and Stellenbosch University, Cape Town, South Africa*

1. Bishay RH, Suryawanshi A. Artifactual hypoglycaemia in systemic sclerosis and Raynaud's phenomenon: A clinical case report and short review. *Case Rep Endocrinol* 2016;2016:1. <https://doi.org/10.1155/2016/7390927>
2. Kaplan H, Amod A, van Zyl FH, et al. Incidence of hypoglycaemia in the South African population with diabetes: Results from the IDMP5 wave 7 study. *J Endocrinol Metab Diabet S Afr* 2019;24(2):58-64. <https://doi.org/10.1080/16089677.2019.1608053>
3. Mertens J, Haddad M. Artifactual hypoglycemia in a patient with systemic sclerosis. *Acta Clinica Belgica* 2020;1-6. <https://doi.org/10.1080/17843286.2020.1837575>
4. Fleischmajer R, Perlish JS. Capillary alterations in scleroderma. *J Am Acad Dermatol* 1980;2(2):161-170. [https://doi.org/10.1016/S0190-9622\(80\)80396-3](https://doi.org/10.1016/S0190-9622(80)80396-3)

*S Afr Med J* 2021;111(2):96. <https://doi.org/10.7196/SAMJ.2021.v111i2.15451>