

Diabetes and Thalassaemia: When the bloods don't match the BGLs

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Objective

To present a case report on the limitations of HbA1c monitoring in patients with thalassaemia.

Clinical Features

A 78-year-old man from a was admitted to hospital following a mechanical fall. The patient had a background of COPD, T2DM, HFpEF, PAH, hypertension, and thalassaemia. The patient reported usual blood glucose levels (BGLs) of approximately 20mmol/L before breakfast, but regular blood tests showed HbA1c levels ranging from 38 (5.6%) to 46 (6.4%) over the previous twelve months. The patient was using insulin glargine only for diabetes control. The treating team was unsure of the reason for the discrepancy between his BGLs and his HbA1c.

Literature Review

HbA1c can be an erroneous measure of BGLs in several situations. HbA1c can be falsely increased in iron or B12 deficiency, chronic renal failure, splenectomy, and chronic opioid use. HbA1c can be falsely decreased in haemoglobinopathies, splenomegaly, and use of some medications (e.g., hydroxyurea).

The patient's thalassaemia diagnosis may explain the apparent discrepancy between his BGLs and measured HbA1c.

Alternative methods for monitoring glycaemic control such as frequent BGLs or serum fructosamine may be implemented when HbA1c is likely to be erroneous.

Iron or vitamin B12 deficiency

Splenectomy

Alcoholism

Chronic renal failure

Hyperbilirubinaemia

Chronic opioid use

Large doses of aspirin

Factors which may falsely increase HbA1c

Administration of iron, vitamin b12, or erythropoietin

Splenomegaly

Chronic liver disease

Haemoglobinopathies

Hypertriglyceridaemia

Antiretrovirals, ribarivin, and dapson

Factors which may falsely decrease HbA1c

Pharmacist Interventions, Case Progress and Outcomes

The pharmacist educated the patient to increase BGL monitoring and was referred to their GP with a note in the discharge summary to use BGLs rather HbA1c for ongoing assessment of diabetes control.

The pharmacist discussed the potential addition of a SGLT2 inhibitor or GLP1 agonist with the treating team which was relayed to the patient's GP.

Discussion

This case outlines the importance of educating pharmacists and other clinicians on potential situations that could lead to falsely high or low HbA1c readings. Pharmacists should be vigilant with HbA1c monitoring in patients with conditions such as thalassaemia to ensure optimal diabetes management.