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# Diabetes mellitus and glucose-6-phosphate dehydrogenase deficiency: from one crisis to another.

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## Abstract

**AIM:** Epidemiological data suggest that glucose-6-phosphate dehydrogenase (G6PD) deficiency may be a risk factor for diabetes. Also, the occurrence of haemolysis in the context of diabetes crises has been reported in patients with G6PD deficiency. A unifying hypothesis could explain these associations.

**METHODS:** We report two patients in whom haemolytic crises occurred soon after acute diabetes decompensation, and revealed G6PD deficiency. We have reviewed the mechanisms that may link the two diseases.

**RESULTS:** One patient was admitted for decompensated ketosis-prone type-2 diabetes (KPT2D), but no acidosis, and was treated with insulin, then metformin and glibenclamide. The second patient had type-1 diabetes and ketoacidosis treated with insulin. Haemolytic crises were recognized 8 and 4 days after admission, respectively, and G6PD deficiency was confirmed in both patients. These patients and the other published cases share, as a unique characteristic, the occurrence of haemolysis after diabetes decompensation, whatever the treatment or associated conditions. Experimental data show that hyperglycaemia can reduce expression of the G6PD gene and activity of the enzyme. Conversely, G6PD deficiency can promote oxidative stress and impairment of insulin secretion by beta cells.

**CONCLUSION:** In patients at risk of G6PD deficiency, the possibility of haemolysis should be explored in case of diabetes crisis. In African patients with KPT2D diabetes, potentially oxidative hypoglycaemic agents should be avoided in the remission phase of the disease. G6PD deficiency and diabetes can aggravate each other, and diabetes could be aetiologically associated with G6PD deficiency.



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## Publication Types, MeSH Terms

### Publication Types

Case Reports

### MeSH Terms

Acute Disease
Adult
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Diabetes Mellitus, Type 1/epidemiology
Diabetes Mellitus, Type 1/metabolism
Diabetes Mellitus, Type 2/complications*

Diabetes Mellitus, Type 2/epidemiology
Diabetes Mellitus, Type 2/metabolism
Female
**Glucosephosphate Dehydrogenase Deficiency**/complications*
**Glucosephosphate Dehydrogenase Deficiency**/epidemiology
**Glucosephosphate Dehydrogenase Deficiency**/metabolism*
Hemolysis/physiology*
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