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Glucose-6-phosphate dehydrogenase deficiency in pregnancy: what's the anaesthetic plan?

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Introduction

Glucose-6-phosphate dehydrogenase deficiency (G6PD-D) is the most common enyzme deficiency worldwide.[1]

Most people with G6PD-D are asymptomatic, but can develop acute haemolysis in response to oxidative stress. Infection, ingestion of fava beans and certain drugs can provoke oxidative stress and G6PD-D is further classified depending on severity. Class I is most severe (associated with chronic haemolytic anaemia); classes IV and V have normal/ increased enzyme activity. This has implications for how these patients are managed; several drugs might be safe for those with class V, but not for those with class I.[1-2]

We present a case of a woman with a history of G6PD-D and the challenge this presented with regards to the anaesthetic management of her labour and delivery.

Case report

A 35 year old primigravida with a twin pregnancy presented for induction of labour for prolonged rupture of membranes. She was well during her pregnancy with no significant past medical history. "G6PD-deficiency" was documented in her notes antenatally, but not flagged to obstetrics or anaesthetics, and was queried with the on-call anaesthetist at time of presentation. On discussion, she was diagnosed with G6PD-D at birth, knew to avoid fava beans and some drugs, but had no definitive list of what was safe/ unsafe to take. She had not seen haematology or anaesthetics during her pregnancy, and thus a clear anaesthetic plan had not been made for her labour and delivery. A brief literature review revealed that some commonly used anaesthetic agents (e.g. bupivacaine, thiopentone, volatiles) are associated with haemolysis in patients with G6PD-D[2], and induction of labour was delayed by several hours whilst awaiting haematology advice. Following review and testing, it was determined that she did not have G6PD-D as per UK standards, and could safely have all drugs used in the obstetric population. She went on to have an epidural sited and this was successfully topped up for the safe delivery of her babies.

Discussion

This case presented a clinical challenge out of hours. No clear guidance was available regarding the best anaesthetic plan for obstetric patients. Several lists of 'safe' and 'unsafe' drugs are available and are based on the class of G6PD-defieiency. Although case reports of anaesthesia are described, class of G6PD-D is rarely reported and therefore interpretation is challenging. It would seem that TCI propofol, fentanyl and rocuronium would be a safe anaesthetic technique to employ, in the event that a patient with unknown G6PD-D status were to present as an emergency. We have written a guideline for use in our department which aims to identify these patients early, and peri-operative management should include: taking a clear history from the patient and their relatives; screening for G6PD-D and including quantitative measurement of enzyme activity; optimisation of haemoglobin during pregnancy; avoidance of oxidative drugs; recognition of haemolysis presentation and advising the patient how haemolysis presents.[1-2]

References

1.Cappellini MD, Fiorelli G. Glucose-6-phosphate dehydrogenase deficiency. Lancet. 2008; 371: 64-74

2.Elyassi AR, Rowshan HH. Perioperative Management of the Glucose-6-Phosphate-Dehydrogenase Deficient Patient: A Review of Literature. Anesth Prog. 2009; 56: 86-91