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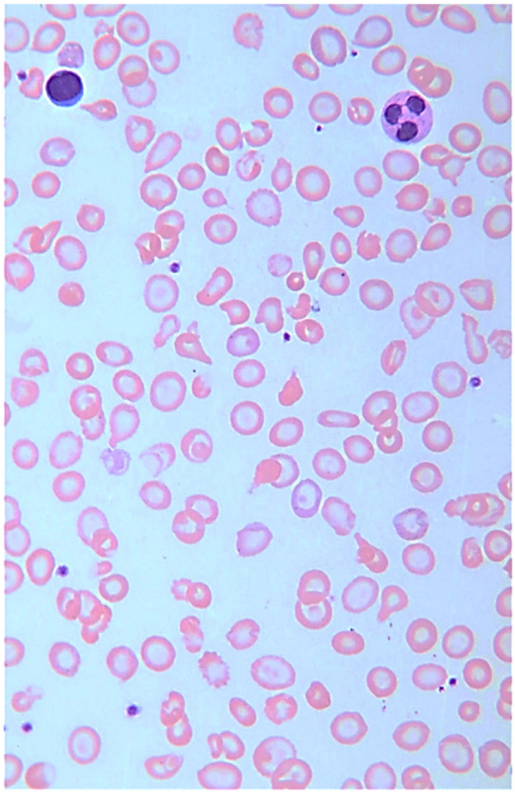
IMAGES IN HAEMATOLOGY

Acute haemolysis following COVID-19 vaccination in a thalassaemic patient with G6PD deficiency



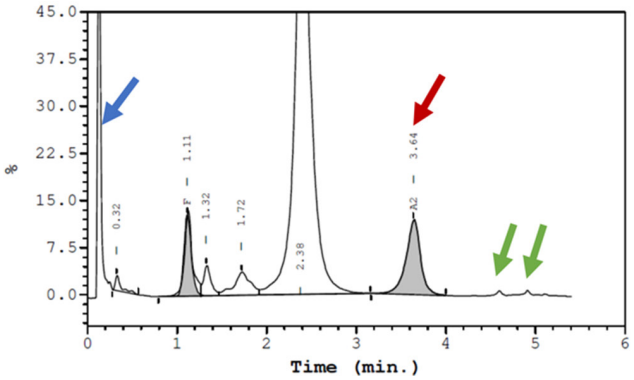
Peak Name	Calibrated Area %	Area %	Retention Time (min)	Peak Area
Unknown	---	0.9	0.32	15806
F	6.6*	---	1.11	115306
P2	---	2.4	1.32	42111
P3	---	4.1	1.72	72023
Ao	---	74.5	2.38	1313588
A2	11.9*	---	3.64	205394

Total Area: 1,764,227

F Concentration = 6.6* %
A2 Concentration = 11.9* %

*Values outside of expected ranges

Analysis comments:



A 20-year-old male presented to the Emergency Department with a 2-day history of fever, fatigue and dark urine. His past medical history included chronic non-transfusion-dependent anaemia. The patient had received the ChAdOx1-S/nCoV-19 vaccine approximately 6 h earlier. Physical examinations showed temperature 38.6°C, marked pallor and icteric sclerae. Splenic percussion indicated splenomegaly. Laboratory studies showed a haemoglobin concentration of 51 g/l with an MCV of 60 fl and normal white cell and platelet counts. Liver function tests showed an unconjugated bilirubin level of 7.14 mg/dl (normal range 0.2–1.2). A peripheral blood film showed bite cells, blister cells and ghost cells on a background of thalassaemic red cells, polychromasia and nucleated red blood cells (left ×100 objective; Wright-Giemsa stain). Howell–Jolly bodies were also observed. Glucose-6-phosphate dehydrogenase (G6PD) during the haemolytic crisis was decreased (2.1 U/gHb, reference >4.6 U/gHb). After 2 days of supportive treatment and packed red cell transfusion, his fever and symptoms of anaemia resolved. Blood cultures were negative. High performance liquid chromatography (HPLC) of a pretransfusion sample (right) showed haemoglobins A, E (red arrow), Bart's (blue arrow) and Constant Spring (green arrows) indicating EABart's disease, a thalassaemic condition resulting from co-inheritance of haemoglobin E and the genotype of haemoglobin H disease. All laboratory tests had returned to baseline by 2 weeks.The patient has two genetic diseases, thalassaemia and G6PD deficiency, that are prevalent in South-east Asia. The acute haemolysis can be attributed to oxidant stress due to COVID-19 vaccination in a patient with G6PD deficiency.

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