

Autoimmune haemolytic anaemia: case report

A 41-year-old woman developed autoimmune haemolytic anaemia (AIHA) following vaccination with mRNA-1273 for SARS-CoV-2.

The woman received her first mRNA-1273 [SARS-CoV-2 mRNA-1273; *dosage and route not stated*] vaccine in March 2021. She experienced dark urine and fatigue after seven days. She was hospitalised twenty days post-vaccination, and her haematology investigations were as follows: Hb and haematocrit levels decreased, RBC distribution width and WBC count elevated, and platelets and mean corpuscular volume normal. Her haemolysis profile including reticulocyte, total bilirubin, direct bilirubin, LDH, AST and ALT levels were elevated with decreased haptoglobin levels. Her direct antiglobulin test (DAT) showed negative results for IgG and C3d, but an eluate generated from her RBCs was reactive against all test cells. She was transfused RBCs and treated with prednisone. She was then discharged with a Hb of 7.3 g/dL. Two days after discharge (35 days following immunisation), she remained unwell. Consequently, she was admitted again to Massachusetts General Hospital with dyspnoea on exertion and persistent exhaustion. She had a significant history of hypertension and central retinal vein occlusion. She received aspirin and metoprolol succinate, and she remained on prednisone. She had no family or personal history of autoimmune illness. After hospitalisation, her body temperature was 96.9°F, oxygen saturation was 98% on room air, HR was 79 beats/minute, RR was 18 breaths/min and BP was 133/78mm Hg. Her haematology investigations and haemolysis both were similar to the prior admission. Her peripheral blood film exhibited spherocytes, reticulocytes, and nucleated RBCs in abundance. Her ANA was slightly positive with normal serum-free light chains, serum immunofixation and flow cytometry. Her repeated DAT and plasma antibody screens showed negative results. Despite negative DAT, antibodies eluted from her RBCs showed high (3+) panreactivity in the MTS gel system. Thereafter, DAT using MTS gel cards instead of Gammaclone yielded a positive (2+) result for IgG. Additional tests confirmed the existence of a cold autoantibody that was reactive (3+) at 37 degrees. Based on all the findings, a diagnosis of AIHA secondary to mRNA-1273 was made.

The woman's prednisone treatment was continued. On day 2 of hospitalisation, she received rituximab, followed by mycophenolate mofetil on day 5. She also received immune globulin on days 7 and 8 of her hospitalisation, as well as a rituximab on hospital day 11. After receiving an additional 6 units of RBCs on day 8, her LDH level started decreasing, and her Hb stabilised at 8 g/dL. She was discharged on day 14 (49 days after receiving the vaccine). As an outpatient, she received two more doses of rituximab, unspecified corticosteroids, and tapered mycophenolate mofetil. Four weeks post-discharge, her haematology investigations and haemolysis profile showed improvement. Her second dose of vaccine was postponed. Antibodies against SARSCoV-2 virus were found to be negative 11 weeks after receiving a single dose of the vaccine.