Case of Macrophage Activation Syndrome in a patient with Systemic Lupus Erythematosus

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Introduction

This case describes Macrophage Activation Syndrome (MAS) associated with Systemic Lupus Erythematosis (SLE). This is an under-recognised hyperinflammatory syndrome of excessive immune activation. It is characterised by inappropriate survival of histiocytes and cytotoxic T cells, leading to a cytokine storm, haemophagocytosis and multi-organ damage. It is a life threatening condition if not promptly identified and treated.

Case Description

A 37 year old lady presented to the Emergency Department with a six week history of new onset generalised erythematous rash covering her face, hands, arms, trunk and lower limbs. It was non-pruritic. She had intermittent fevers over the same six week period with five kilograms of weight loss. On examination, she had a widespread erythematous macular rash with skin sloughing to the fingertips. There were associated areas of pigmentation on the trunk. She had no synovitis. Diffuse hair loss was noted but no alopecia. Cardiac, respiratory, gastrointestinal and neurological examinations were unremarkable. She was on no regular medications.

Extensive laboratory investigations were completed. Hb subsequently dropped to 8.5g/dl on the third day of admission with MCV 74fl and MCH 23 pg. Platelets dropped to a low of 69 x 10^9 in the first week. Liver function tests on admission showed evidence of transaminitis. Ferritin level checked on day three was elevated at 6,703 ng/ml (5-204). Total Cholesterol was elevated at 8.00mmol/l (<5), triglycerides elevated at 15.08mmol/l.

ANA was positive 9.9 (<0.7), anti-Ro antibody was positive at 240, anti-La was positive at 84, anti-RNP antibody was elevated at 63. Complement studies showed reduced C3 at 0.78 and normal C4 at 0.22.

CT Thorax, Abdomen and Pelvis was completed to out-rule a malignant cause and was negative. Haematology input was sought and bone marrow biopsy was performed. Bone marrow biopsy showed disorganised haematopoiesis and evidence of haemophagoctyosis. Dermatology input was also obtained and it was felt that the skin rash was in keeping with acute lupus. Skin biopsy was completed which was not classical for but in keeping with acute lupus.

The patient met the diagnostic criteria for SLE as per the 2012 Systemic Lupus International Collaborating Clinics (SLICC) Criteria (positive ANA, positive lupus anticoagulant, thrombocytopenia, leukopenia, low C3 levels). Diagnosis of Macrophage Activation Syndrome secondary to acute SLE was made after the extensive blood work up was reviewed and HScore criteria or secondary HLH/MAS was met.

The patient was treated with 500mg methylprednisolone three times daily for the first three days plus intravenous immunoglobulins (IVIg) at a dose of 1g/kg for two consecutive days. Monitoring of ferritin, lactate dehydrogenase and full blood count was completed daily. On day four of treatment she was changed to 50mg oral dexamethasone. After fourteen days she was subsequently commenced on mycophenolate mofetil 500mg daily, titrated up to 1g twice daily and steroids were slowly tapered.

Discussion

sHLH is a clinical syndrome with features that mimic the features of many other systemic illnesses. Pyrexia of unknown origin is the cardinal feature of the syndrome. The difficulty this poses is that this is a non-specific sign and extensive investigations are required to establish the diagnosis. Hyperferritinaemia is a key laboratory feature and was a key diagnostic clue in this case. Other notable blood derangements include cytopenias, hypertriglyceridemia and hypofibrinogenaemia.