Secondary hemophagocytic syndrome (HLS) or macrophage activation syndrome (MAS) complicating presentation of systemic lupus in an elderly woman

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Secondary hemophagocytic syndrome or macrophage activation syndrome is a subacute/chronic complication of systemic-onset juvenile arthritis (SLE) and juvenile systemic lupus and has been termed “cytokine storm syndrome.” Less frequently it may be seen in adults. Primary forms (hemophagocytic lymphohistiocytosis) are characterized by familial predispositions related to genetic mutations or usually present in childhood. We observed a 73 year old Filipino woman present with fever, rising transaminases, pleural effusion, arthritis, cryoglobulins, high ferritin, (2800 ng/ml) and rising ANA titer. Work-up determined viral serologies were negative, positron emission tomography, and ECHO evidence for endocarditis. Lumbar puncture revealed increased cells and protein including IgG. Electrolytes of the CSF fluid did not demonstrate altered electrolytes suggesting an impairment of the blood brain barrier and or increased IgG synthesis. Treatment with high dose steroids transiently improved her hematologic picture, which then deteriorated (WBC 10,000, platelets 5,000,000/ml). Bone marrow evaluation demonstrated a hypercellular marrow with decreased granulopoiesis and increase in histiocytic cells including engulfment of erythrocytes and neutrophils.

This patient fulfilled the preliminary diagnostic criteria for MAS complicating SLE. We believe early institution of definitive therapy was likely etiologic. Establishing the diagnosis early warrants early bone marrow evaluation to differentiate this condition from other causes of immune cytopenias in adults.

CONCLUSION
- Macrophage activation syndrome (MAS) may occur in adults and the elderly.
- Clinical and laboratory findings suggest massive inflammation, progressing to multiple organ dysfunction syndrome and eventual death.
- CAMPS represents one of many causes (including infection) for cytokine storm syndrome (CSS).
- Immune complex disease (i.e. small vessel vasculitis) was likely etiologic.
- Early diagnosis should permit the early institution of appropriate immunosuppressive therapies (i.e. interleukin 1 inhibition and / or alkylating agents).

References

Abstract
Prior to this hospitalization, there was no established diagnosis of a collagen-vascular disease or systemic lupus.

Serologic testing revealed repeated rising ANA titer to 1/640 (homogeneous and nuclear pattern); serial low complements* with detectable cryoglobulins (Complete blood counts are reported below)

Work-up for CNS deterioration:
- MRI: Moderate generalized atrophy and numerous subcortical and central foci of high signal on FLAIR sequences consistent with small vessel disease
- EEG: Diffuse slowing and disorganization consistent with a diffuse encephalopathic process
- Lumbar puncture: WBCs 19 cells/ul, protein 950 gm/dl Electrophoresis IgG 13.5 gm/dl (no oligoclonal bands with identical bands in serum and CSF)

*Complement measurements are an indirect method to survey for immune complex deposition.

FINDINGS:
- Moderately hypercellular marrow with decreased granulopoiesis, dyspoiesis, with left shift (i.e. absence or diminished number of mature forms).
- Megakaryocyte dyspoiesis
- Markedly decreased erythroid series
- Increase in benign histiocytes (tissue based macrophages)

Glucocorticoids at varying doses up to 1 gram daily were administered from 11/11/13
Hydroxychloroquine 600 mg /day to 400 mg /day was instituted on 11/19/13
Rinaximab 375 mg/m² was administered on 11/20/13