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"Necrotizing arteritis and crescentic glomerulonephritis in an ANCA-negative lupus nephritis patient"

Introduction: Small vessel vasculitis is divided into two groups based on whether or not immune complex (IC) deposition is present. Small vessel vasculitis without IC deposition is generally accompanied by the presence of anti-neutrophil cytoplasmic antibody (ANCA) accumulation in the vessel wall. Small vessel vasculitis with ICs can occur in diseases such as systemic lupus erythematous (SLE).[i] Lupus vasculitis is a secondary vasculitis that can occur in over half of SLE patients and is a severe example of renal disease in SLE. [ii,iii] It is most often characterized by IC deposition in the microvasculature, causing a diffuse, proliferative glomerulonephritis; crescent formation is rare.[iv] Lupus nephritis is divided into six classes based on the extent and pattern of inflammation and IC deposition.[Error! Bookmark not defined.] Lupus nephritis can be associated with ANCA positivity in about 15% of lupus patients.[ii] When small vessel vasculitis in the kidneys is ANCA-positive, it typically manifests as a rapidly progressive glomerulonephritis. Histologically, this presentation corresponds to necrotizing, crescentic glomerulonephritis.[iv]

Case: A 24-year-old female with a past medical history of SLE, hypertension, obesity, and medication non-adherence presented to the rheumatology clinic with complaints of fatigue and dyspnea for the past month. At their recommendation, the patient presented to the hospital for pulse-dose steroid administration in the setting of a suspected lupus flare. Chest x-rays obtained outpatient and upon admission showed evidence of a newly enlarged cardiac silhouette. An echocardiogram showed new-onset severe mitral and tricuspid regurgitation and right ventricular systolic pressure >90 mmHg consistent with pulmonary hypertension. There was no evidence of left ventricular systolic function or diminished ejection fraction. Nephrology was consulted due to increasing sub-nephrotic range proteinuria. Kidney function continued to decline over the course of her hospital stay, progressing to a Stage III AKI. Urinalysis showed no active sediment. Five days into hospitalization, she began experiencing severe left upper abdominal and lumbar pain and sudden-onset nausea and vomiting. Renal biopsy showed interstitial fibrosis, tubular atrophy, segmental sclerosis, crescent formation, and necrotizing arteritis, superimposed on lupus nephritis classes IV and V. Anti-MPO, Anti-PR3, P-ANCA, and C-ANCA were negative. Following biopsy results, the patient began a 3-month course of biweekly low-dose cyclophosphamide infusions per current guidelines.[v]

Discussion: Patients with lupus nephritis and positive ANCA serology are more likely to have necrotizing and segmental patterns of glomerulonephritis compared with those that are ANCA-negative.[vi] The patient's glomerular crescent formation and necrotizing arteritis consistent with rapidly progressive glomerulonephritis is more commonly seen in ANCA-positive small vessel vasculitis.[vii] Instead of a diffuse proliferative glomerulonephritis, there was a unique presentation

of necrotizing, crescentic glomerulonephritis in addition to lupus nephritis in the absence of anti-neutrophil cytoplasmic antibodies.

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