Immune-complex-mediated membranoproliferative glomerulonephritis refers to a glomerulonephritis that has immunoglobulin and C3 deposition in the kidney which can be seen on immunofluorescence examination. It is associated with pathological autoantibodies production. Immune complexes damage glomerular structures by attracting circulating inflammatory cells or activating resident glomerular cells to release vasoactive substances, cytokines, and activators of coagulation.

Case Summary

Our case illustrates an 18-year-old female with a history of attention deficit hyperactivity disorder, exercise induced asthma, and episodic epistaxis (recently cauterized) who presented to the emergency department (ED) with complaints of new lower extremity swelling, one month of non-productive cough and low back pain over the past four months that has some associated radiculopathy but no red flag symptoms. Patient was a previously healthy female, who just started college one month ago. Labs obtained in the ED were significant for creatinine to 13.87, GFR of four, hemoglobin of 5.5. Urinalysis demonstrated 2+ protein and hemoglobin with a protein/creatinine ratio of 4.4. Patient was admitted to the medical intensive care unit (MICU) for increased work of breathing and volume overload. Patient was diuresed with no improvement. Renal ultrasound revealed mildly echogenic kidneys consistent with medical renal disease. Echocardiogram revealed that the left ventricle was moderately dilated with an ejection fraction of 30-35%.

Patient’s kidney function continued to decline, and the patient was initiated on hemodialysis. Kidney biopsy was done and showed 14 glomeruli by light microscopy, 12 of which were globally sclerosed and near-globally sclerosed with 70-80% interstitial fibrosis. The findings were indicative of chronic immune complex glomerulonephritis specifically indicating severe chronicity with the above-mentioned interstitial fibrosis. Renal biopsy gene testing was negative for BMPR2, SDCCAG8, SLC4A4, BBS2. Patient’s hepatitis and Human immunodeficiency virus (HIV) panels were negative. Patient had an abnormal serum protein electrophoresis, but now monoclonal protein was detected by immunofixation electrophoresis. Further autoimmune work-up was negative for ANA, DAT POLY, C-ANCA, P-ANCA, and DS-DNA.

DISCUSSION

Immune complex glomerulonephritis results from chronic antigens or circulating immune complexes. Patients with findings consistent with immune complex glomerulonephritis are usually evaluated for infections such as hepatitis B and C, chronic bacterial infections, and autoimmune diseases to evaluate for an inciting cause. If that workup is negative, they are evaluated for activation of the alternative complement pathway or for chronic thrombotic microangiopathy. Our patient was evaluated for those underlying causes with all workups being negative. An underlying cause can be found in many cases, but despite a thorough evaluation, a small minority do remain idiopathic. This case demonstrates a part of the small minority that do remain idiopathic, but despite this, physicians should continue to monitor symptoms and investigate further for rare causes that may contribute to the patient developing this disease process.

REFERENCES
