

A Case of Complete Heart Block Secondary to ANCA-Associated Vasculitis

Krista Lim-Hing, MD

INTRODUCTION

Anti-neutrophil cytoplasmic antibody (ANCA) associated vasculitides are systemic autoimmune diseases that often present as non-specific prodromal symptoms such as fever, fatigue, headache, and weight loss.¹ With modern treatment, the disease has changed from being universally fatal to being treatable. It can have a chronic relapsing and remitting course. Therefore, early diagnosis is necessary.^{2,3}

CASE PRESENTATION

A 53-year-old male with a past medical history of chronic sinusitis and some epistaxis needing multiple courses of antibiotics and steroids, was admitted after being diagnosed with high-grade heart block at another institution. He was found to have a heart rate of 26 and was given a temporary pacemaker prior to the transfer. Subsequently, a dual-chamber pacemaker was placed. An echocardiogram showed mild aortic stenosis and regurgitation with right ventricular enlargement and an ejection fraction of 65%. No etiology was found for the heart block and work up was negative for medications, electrolytes, ischemia, significant structural heart disease or lyme disease. Pacer placement was without any complications. The patient was discharged home and did well for 10 days and then returned again to the emergency room with complaints of dry cough, chest pain, progressive shortness of breath, fatigue, and fever to 101.2 degrees Fahrenheit. He reported a fifteen pound weight loss over the past month. His family history was noncontributory. He worked as an auto mechanic and reported former cocaine use over 20 years ago. He had no history of tuberculosis exposure and was up to date on his screening colonoscopy.

Physical exam findings included mildly congested bilateral nares with some postnasal thick secretions. On careful examination, he had "saddle nose" anatomy that he claimed to have noticed just months prior to presentation. Auscultation of his lungs revealed crackles

diffusely and posterior left lung base egophony but no wheezes. The lung findings were new as compared to the recent admission for heart block. There was nothing significant on the basic laboratory tests. Chest x-ray and CT scan on admission revealed diffuse bilateral airspace opacities and nodule consolidation with mediastinal and right hilar adenopathy. These findings were suspicious for multifocal pneumonia with a separate infectious inflammatory process.

DIFFERENTIAL DIAGNOSIS

On initial presentation the differential diagnosis ranged from infectious to autoimmune to malignant pathology. There was initial concern for tuberculosis, pneumonia or malignancy.

HOSPITAL COURSE

Blood, urine and sputum cultures didn't identify any bacterial or fungal infectious etiology. AFB stains were negative. He underwent bronchoscopy to better evaluate the lung process and biopsy was performed revealing mild interstitial pneumonitis and intraalveolar red blood cells. Further in the course, patient developed acute kidney injury with a baseline creatinine of 0.9 mg/dl that peaked at 2.0 mg/dl. He had no evidence of oliguria or dysuria. Based on his constellation of signs and symptoms, he underwent a work-up for vasculitides. This included pertinent negatives for the following lab studies: HIV screening, hepatitis serologies, anti-nuclear antibody (ANA), double stranded DNA (dsDNA), reduced complement levels, basement membrane antibody, anti-Ro/anti-La antibodies, and quantiferon assay. ANCA screen came back positive for p-ANCA (antimyeloperoxidase). A kidney biopsy revealed interstitial granulomatous inflammation with pauci-immune staining that was consistent with p-ANCA related glomerulonephritis. He was started on high-dose pulse steroids and cyclophosphamide.

DISCUSSION

This patient's prodromal flu-like symptoms of fever, fatigue, and weight loss were classic for the initial vasculitis presentation.¹⁴ His history of chronic sinusitis and epistaxis that was best relieved by steroids was also an indication of vasculitic disease.⁵ The lung biopsy showing hemorrhagic alveolar infiltrate and kidney biopsy showing glomerulonephritis were most consistent with granulomatosis with polyangiitis (GPA). However, no granulomatous vasculitis or pulmonary capillaritis were seen in his lung biopsy. Large observational studies have shown that rhinology, pulmonary, and renal are the systems most commonly affected in this spectrum of diseases.⁶ This patient presented with heart block prior to the typical vasculitic symptoms. As no clear cut etiology was found for his heart block, there was a high suspicion for vasculitic origin of his heart block. On our review of literature, we found small number of case reports that reported first degree to complete heart block in patient's with GPA and other vasculitides.

ANCA-associated vasculitis is a subset of small-vessel vasculitis and includes GPA, eosinophilic granulomatosis with polyangiitis (EPGA), and microscopic polyangiitis (MPA). It is usually found in older adults but is reported in all ages.⁵ GPA specifically shows granulomatous inflammation of the respiratory tract and abnormal urinary sediment. MPA shows no granuloma formation. EPGA shows characteristic rhinitis, asthma, and eosinophilia.⁷

Cardiac complications of GPA are thought to be rare. While involvement of heart has been reported to be around 30% at autopsy in known GPA, clinical cardiac involvement is low.⁸ A recent report indicated evidence of cardiac involvement in 8% to 16% at the time of diagnosis and upto 25% during the course of the disease.⁹ The predominant cardiological involvement has been pericarditis (effusion), coronary arteritis and myocarditis (left ventricular dysfunction) on pathology.¹⁰ Valvular and conduction defects have been rarely described in the past. More recently, there have been increasing number of reports of conduction disease defects as well as valvular abnormalities associated with GPA. GPA can have pathological involvement of aortic or mitral valve,

causing valvulitis leading to regurgitation as predominant valve dysfunction.⁹ GPA has also been associated with bundle branch blocks to all grades of heart block. These are thought to be from granulomatous inflammation involving the AV node or the bundle of his.¹¹ We believe that our patient's heart block was associated with GPA. The close time between the two diagnosis, as well as similar sequence of events like diagnosis of heart block first and then diagnosis of GPA in some other case reports substantiate our association. Heart block has been reversible with treatment of GPA with immunosuppression in some literature.¹²⁻¹⁴

The approach to treatment of ANCA associated vasculitis can be divided into two categories: mild disease and moderate to severe disease. For mild disease, with no evidence of glomerulonephritis or organ-threatening disease, a regimen of glucocorticoids in combination with rituximab or methotrexate should be started. If the disease is refractory to methotrexate treatment the patient should have a trial of cyclophosphamide. Moderate to severe disease demonstrates organ damage and has a less defined recommendation for treatment. Overall, literature supports either a cyclophosphamide or rituximab-based regimen in combination with glucocorticoids.³ Prophylaxis against opportunistic infections during induction immunosuppression is also suggested. Our patient's heart block resolved before starting steroids, so it was likely a temporary block.

KEY POINTS

ANCA-associated vasculitis can initially present with prodromal flu-like symptoms and signs of inflammation. Though not very common, ANCA-associated vasculitis can be associated with cardiac valvulopathy and conduction abnormalities. Patients presenting with heart block and recent history of or current symptoms of inflammatory or infectious disease, should be screened for GPA and vasculitides in addition to Lyme disease and viral myocarditis work up. If caught early, heart block due to vasculitis is potentially reversible and can save a patient from unnecessary procedures. The management consists of immunosuppression with steroids and other agents.

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"Sunset at the Jersey Shore"

photograph by Michael Valentino, MD, PhD

