Microscopic Polyangiitis with Severe Multi-Organ Involvement in a 12-year-old Asian Female with Type 1 Distal Chromosome 22q11.21 Deletion Syndrome

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BACKGROUND

- ANCA associated vasculitis (AAV) primarily affects blood vessels of the lungs and kidneys as well as other organs.
- The microscopic polyangiitis (MPA) subtype is a pauci-immune necrotizing small vessel vasculitis.
- The incidence of pediatric MPA is rare with mean age of onset between 9-12 years with female predominance.
- The etiology of AAV is unknown and thought to be multifactorial.
- Serious organ involvement can occur in AAV which may guide our therapeutic approach.

PURPOSE

The purpose of this case report is to highlight the multi-organ involvement in AAV that can lead to morbidity and mortality in pediatric patients.

CASE

- Our patient is a 12-year-old Asian female with history of short stature and resolved heart murmur who presented with a 3-month history of intermittent abdominal pain, anorexia, 11-pound unintentional weight loss, hematochezia and polyarthralgia.
- Evaluated by Gastroenterology at outside hospital for inflammatory bowel disease (IBD) however endoscopy at that time was unremarkable.
- Further evaluation demonstrated diffuse polyarthritis and erythematous purpuric ulcerative lesions involving the lower extremities.
- Rheumatology evaluation revealed: positive antinuclear antibody titer of 1:320 with negative antibodies. Importantly, positive myeloperoxidase antibody 57 (positive > 1.0 unit) and positive pANCA titer 1:160.

HOSPITAL COURSE

On admission to Texas Children's hospital, her initial diagnostic studies revealed elevated ESR of 116 mm/hr, CRP of 9.3 mg/L. Her hemoglobin was 11.2 mg/dl with normal iron studies. Elevated serum creatinine 0.8 mg/dl. Urinalysis revealed microscopic hematuria and non-nephrotic range proteinuria. Skin and renal tissue biopsies showed fibrinoid necrosis without granulomas and pauci-immune glomerulonephritis, cellular crescents, and sclerotic glomeruli respectively.

GI was consulted for an acute drop in her hemoglobin to 6.7 mg/dl, EGD and colonoscopy revealed no identified bleed. Due to anemia of unknown etiology in the setting of a negative GI evaluation, a chest CT was obtained revealing concerns of inflammation and/or hemorrhage. A final diagnosis of microscopic polyangiitis (MPA) was made. Due to her significant reno-pulmonary involvement, she was treated with corticosteroids, Rituximab and Cyclophosphamide (CYC). She was discharged on an oral steroid taper and monthly CYC.

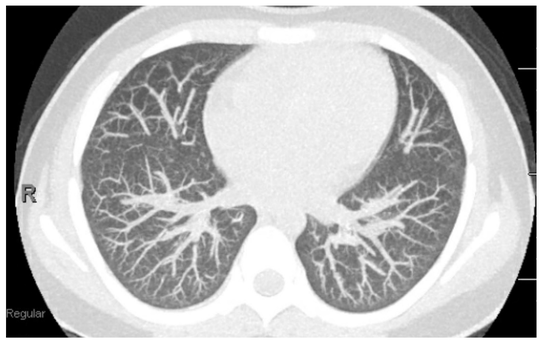

Fig 1: Chest CT demonstrating bilateral juxtapleural and juxta fissural ground glass opacities representing foci of inflammation and/or hemorrhage

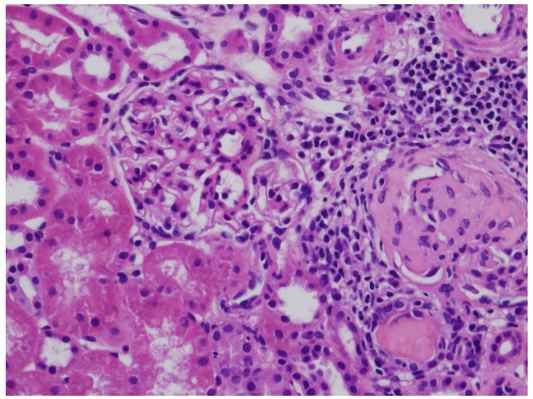

Fig 2: Kidney Biopsy (H&E) demonstrating 37% globally sclerosed glomeruli and 8% cellular crescents surrounded by interstitial fibrosis

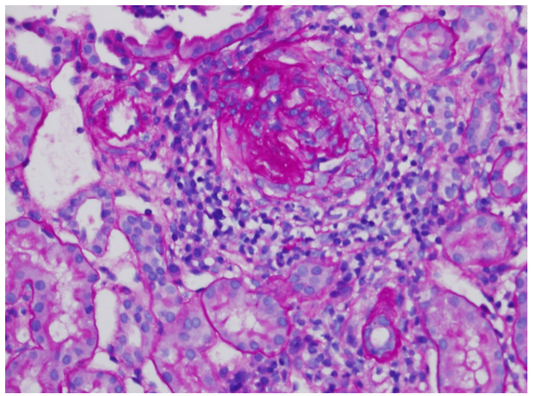

Fig 3: PAS stain demonstrating fibrocellular crescent glomeruli with endocapillary proliferation and obliteration of capillary loops

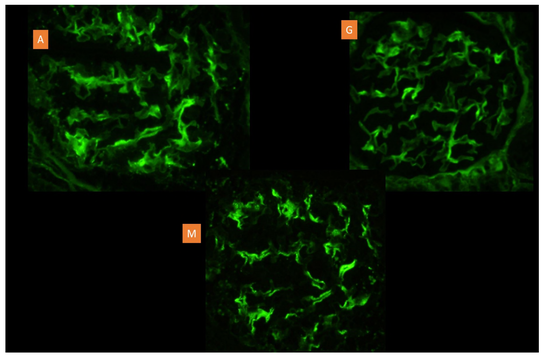

Fig 4: Immunofluorescence (IF) demonstrating focal mesangial IgA (2), IgG (2+), and IgM (2+)

CONCLUSION

- AAV is a small vessel vasculitis that can present with serious multi-organ involvement causing long-term morbidity.
- Medical management includes steroids, Rituximab and Cyclophosphamide.
- Acute onset anemia in AAV may reveal life-threatening organ bleeding, such as lung bleeding, without clear clinical symptoms.
- Of note, her history of short stature, resolved heart murmur, developmental delay and dysmorphic features prompted Genetics evaluation. A chromosomal microarray revealed a Type 1 distal chromosome 22q11.21 deletion syndrome distinct from DiGeorge syndrome. This was not thought to be contributory to AAV diagnosis.

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