Renal Outcomes in Pediatric Anti-Neutrophil Cytoplasmic Antibody (ANCA) Associated Vasculitis in the First 24-Months

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INTRODUCTION

What is ANCA-associated vasculitis?

- Rare systemic disease characterized by inflammation and damage to small and/or medium blood vessels
- Includes granulomatosis with polyangiitis (GPA), microscopic polyangiitis (MPA), and eosinophilic granulomatosis with polyangiitis (eGPA)
- Circulating autoantibodies (ANCA) directed against myeloperoxidase (MPO) or proteinase-3 (PR3) antigens
- Associated with various clinical manifestations, frequent relapses and high cumulative morbidity
- Renal disease is the most common manifestation of pediatric ANCA associated vasculitis (AAV)
- Due to disease rarity, renal outcomes and predictors of outcome in pediatric-AAV have not been well studied

PedVas Initiative:

- Multi-centre, international study
- Clinical and biological data collection from patients with systemic and CNS vasculitis
- 35 International sites
- >400 AAV patients enrolled

OBJECTIVES

- Describe renal disease course and outcomes in the first 24-months of disease
- Evaluate the utility of eGFR at diagnosis to predict renal outcome at 12-months
- Examine eGFR at presentation and its trajectory

METHODS

Inclusion Criteria:

- GPA, MPA, or ANCA-positive immune glomerulonephritis
- <18 years of age at time of diagnosis (TOD)
- Follow-up data at 12-months and/or 24-months
- Biopsy confirmed pauci-immune GN OR dialysis dependence at TOD

Category	GFR Range (ml/min/1.73m²)
Normal	>90
Mildly Reduced (MildR)	60-89
Mild-Moderately Reduced (Mild-ModR)	45-59
Moderately-Severely Reduced (Mod-SevR)	30-44
Severely Reduced (SevR)	15-29
Renal Failure (RF)	<15

Table 1: Patients classified according to eGFR. Classifications based on Chronic Kidney Disease Staging System

- Disease activity was assessed using the pediatric vasculitis activity score (PVAS)
- Damage was assessed using the pediatric vasculitis damage index (pVDI)

RESULTS

Patient Characteristics at Baseline	
Included Patients	N = 145
12-month	N = 142
24-month	N = 76
Median Age	13.8 years (4.1 - 17.8 years)
Female	69%
Caucasian	55%
GPA	70%
pANCA	49%
cANCA	50%
Medications	
Cyclophosphamide	86%
Rituximab	22%
Cyclophosphamide + Rituximab	9%

Renal Characteristics at Baseline	
Haematuria	92%
Proteinuria	91%
Hypertension	27%
GFR	
Normal	29%
Mildly Reduced	9%
Mild-Moderately Reduced	8%
Moderately-Severely Reduced	24%
Severely Reduced	14%
Renal Failure	17%
Dialysis	24%

Table 2: Patient demographics and patients renal characteristics at baseline

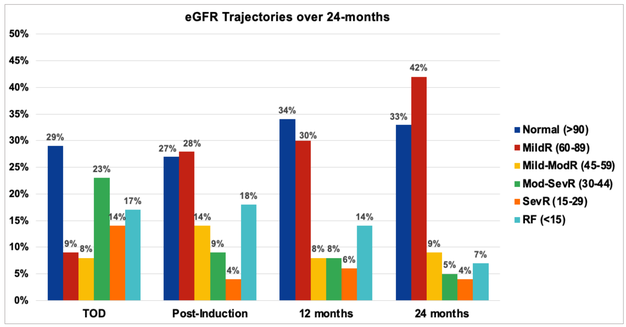

Figure 1: eGFR trajectories across 24-months. *TOD patients (n=145), post-induction (n=139), 12-months (n=142), 24-months (n=76)*

- 42 patients (29%) had normal eGFR at TOD
- 24 patients (17%) were in RF at TOD

<u>At last follow up:</u>

- 95% had normal or MildR eGFR
- 67% had RF or were transplanted

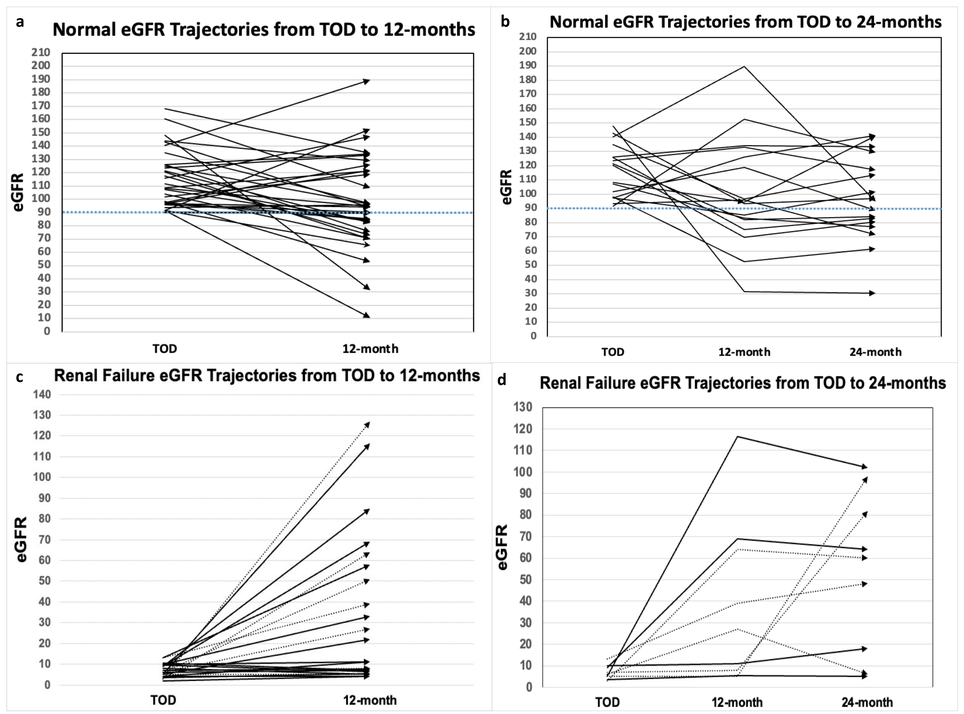

Figure 2: Normal and renal failure eGFR trajectories from TOD to 12-months, and TOD to 12-months to 24-months. *Blue line highlights normal eGFR of >90. Dotted line represents patients who have received a renal transplant*

RESULTS

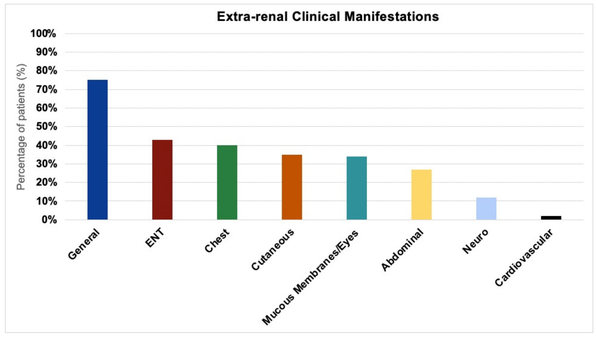

Figure 3: Clinical features of patients at diagnosis (n=145)

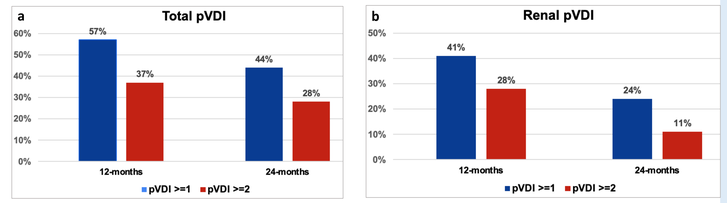

Figure 4: Total and renal pVDI at 12 and 24-months. *Of 145 patients, n=129 and n=61 had completed the questionnaire at 12 ms. and 24 ms., respectively*

CONCLUSIONS

- More than half of children with AAV associated renal disease have ModR renal function or worse at diagnosis
- At 12- and 24- month follow up, two-thirds of patients continue to have reduced renal function
- Patients who present with one extreme of eGFR (normal vs. RF) continue to follow similar trajectory
- Patients who present with RF are unlikely to recover normal renal function

FUTURE DIRECTIONS

- Examining eGFR trajectories for non-extreme categories (mildR, mild-modR, mod-sevR, sevR)
- Chi-square tests to assess differences in 12-month eGFR by strata
- Ordinal logistic regression models to assess association between eGFR category at TOD and eGFR at 12-months
- Will control for possible baseline confounders including diagnosis, ANCA status, disease activity level (PVAS) and treatment

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