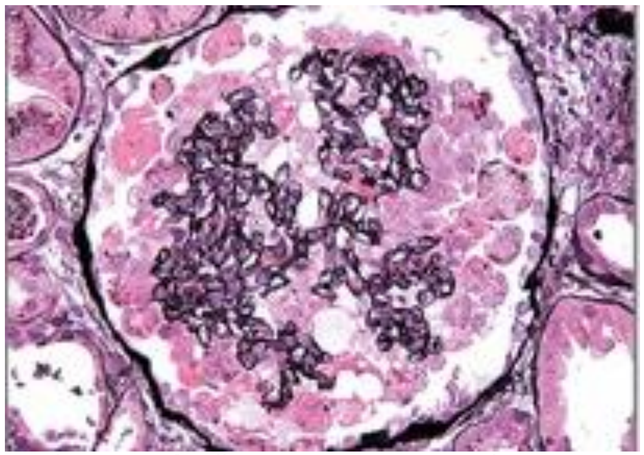
COVID-19 Associated Nephropathy

Christopher J Felice, DO[1], Christopher R. Scheid, DO[2]

1. Department of Family Medicine, UPMC Lititz, Lititz, PA 2. Department of Family Medicine, UPMC Lititz, Lititz, PA

Introduction

There has been an association of COVID-19 infection with Collapsing Glomerulopathy (CG). Another name for this relatively new trend is COVID-19-associated nephropathy (COVAN). It is found mostly in African Americans who have the APOL1 genotype. CG generally has a poor prognosis. One study had an average of 13 months till progression to ESRD in patients with non-HIV associated CG, however not much data exists for COVAN. Some studies suggest there may be benefit from glucocorticoids or calcineurin inhibitors in COVAN but data on the benefits is limited. This case presents an example of a patient who was found to have COVAN.



Example image of Collapsing variant FSGS under microscope

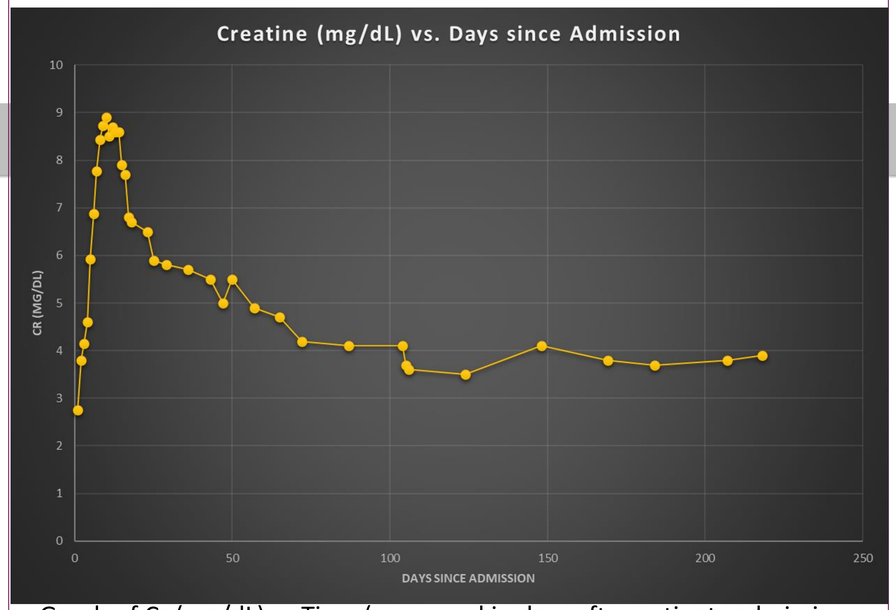
HPI

- 42 year old African American male with PMH of HTN, HLD, DM type 2 presented with worsening cough, SOB, fatigue, and vomiting over the last 6 days
- Associated Symptoms: loss of taste and smell
- Denies fever, chills, hematuria, change in urinary frequency, illicit drug use, recent travel
- Received first dose of the Pfizer vaccine 1 day prior to symptom onset
- Home medications: metformin 500 mg BID, atorvastatin 20 mg daily, lisinopril 5 mg daily, sitagliptin 25 mg daily
- Vitals in ED: Temp 98.5, HR 117, RR 21, BP 149/89, saturating 96% on room air

Hospital Course

- **Total Length of Stay:** 18 days
- **Transferred on day 8 to a tertiary care center
- In the ED and throughout his hospital course he had mild respiratory symptoms and was saturating well on room air
- Tested positive for COVID-19 in ED and was treated with Sotrovimab (COVID-19 monoclonal antibodies)
- Not given Remdesivir during his stay as he was not hypoxic
- AKI with creatinine of 2.76 (baseline 1.07) in the ED and 3+ proteinuria, so patient was admitted for further work up
- AKI initially thought to be pre-renal based on lab results
- Treatment was mostly conservative during his admission
- Course of Solu-Medrol was started day 4 for worsening renal function. Solu-Medrol was discontinued after transfer by receiving hospital
- CRRT was considered but not pursued due to improvement in renal function
- Renal biopsy delayed until after discharge due to multiple different complicating factors

- **Discharge Planning:**
- Elective renal biopsy and close follow up with nephrology



Graph of Cr (mg/dL) vs Time (measured in days after patients admission to hospital, including values from after discharge)

Results

- Creatinine peaked at 8.9 on day 10 of admission, then trended down to around 3.7-4.1 after several months
- UA: 3+ blood, 3+ protein, with 4-8 RBC and 0-2 WBC
- Proteinuria remained 3+ throughout his stay
- Microalb/Cr ratio: 2,219.4
- C3, C4, DNA (ds) antibody wnl
- ANA, Anti-Gbm antibody, DNA (ds) antibody, SM antibody, Sjogren's antibody, cANCA, pANCA all negative
- HIV, Hep B, Hep C workup was negative
- US retroperitoneal: enlarged kidneys without any dilation of the renal collecting system
- Renal biopsy showed interstitial inflammation with ~10% fibrosis, moderate arteriolar hyalinosis, mild tubular atrophy, and glomerular sclerosis

Conclusion

- Biopsy results were consistent with COVID-19-associated nephropathy (COVAN) and the patient is currently being treated with a 3-6 month high dose prednisone taper
- COVAN should be included in the differential of COVID-19 patients who present with AKI and proteinuria
- COVID-19 can cause severe organ damage even when presenting with mild respiratory symptoms

References

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