



### RESEARCH ARTICLE

## ANCA NEGATIVE PAUCI IMMUNE CRESCENTIC GLOMERULONEPHRITIS IN POST/LONG COVID-19 PATIENT-A UNIQUE CASE REPORT

Dr. K. Shivaraju<sup>1,2</sup> and Mandhala Saikrishna<sup>3</sup>

1. Department Of Pharmacy Practice, Bharat Institute of Technology, Hyderabad, Telangana, India.
2. Head of the Department of Internal Medicine, Krishna Institute of Medical Sciences, Hyderabad Telangana-500003.
3. Pharm.D(Intern)Department of Internal Medicine, Krishna Institute of Medical Sciences, Hyderabad Telangana-500003.

#### Manuscript Info

##### Manuscript History

Received: 27 March 2022  
Final Accepted: 30 April 2022  
Published: May 2022

##### Key words:-

SARS-Cov-2, Anca, Acute Kidney Injury, Glomerulonephritis

#### Abstract

Coronavirus disease 2019 is a pandemic caused by SARS-Cov-2 infection, it belongs to the family of beta coronavirus., the incidence of acute kidney injury in hospitalized patients with covid-19 has been reported to be approximately 37% in the United States. Here we present a 76 years old male patient suffered from fever and body pains one month back diagnosed with long covid or post covid-19. Now patient presented with complaints of leg swelling and shortness of breath on exertion from three to four weeks and decrease appetite from 2 months and facial puffiness and fatigue present. After evaluation patient was diagnosed with ANCA negative pauci-immune crescentic glomerulonephritis. Then the patient was treated with appropriate medications and underwent dialysis multiple times. So based on our knowledge this may probably be the first case of ANCA negative Pauci immune crescentic glomerulonephritis associated with long covid or post covid.

Copy Right, IJAR, 2022., All rights reserved.

#### Introduction:-

Coronavirus disease 2019 is a pandemic caused by SARS-Cov-2 infection, it belongs to the family of beta coronavirus., the incidence of acute kidney injury in hospitalized patients with covid-19 has been reported to be approximately 37% in the United States. Various series of renal biopsy and autopsies have shown that acute tubular injury is the most common renal pathology in these patients. an inter-relation between crescentic glomerulonephritis&covid-19 has rarely been illustrated (1). Some cases were reported but those were ANCA positive pauci immune crescentic glomerulonephritis and some cases for covid vaccine-induced Pauci immune crescentic glomerulonephritis. but ANCA negative Pauci immune crescentic glomerulonephritis associated with long/post covid-19 has not yet been reported.

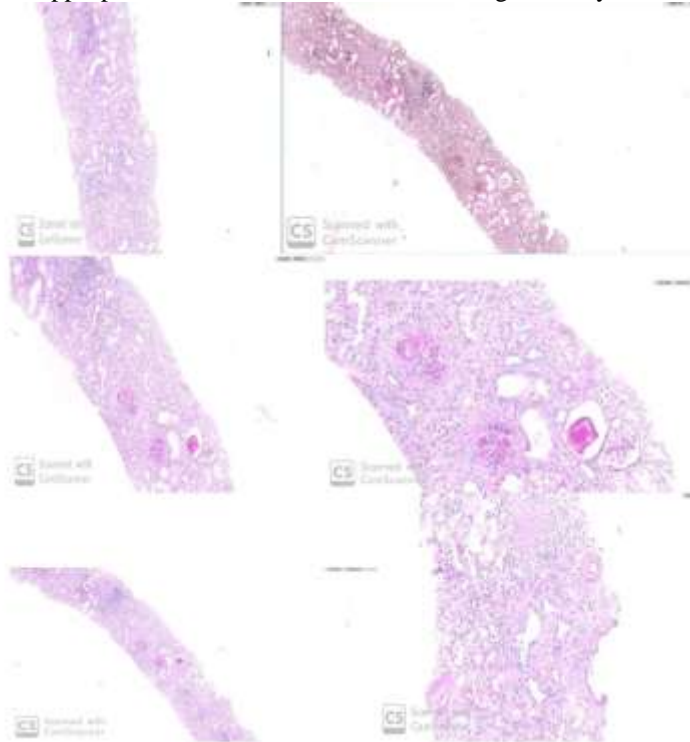
#### Case presentation:-

A 76 years old male patient with no comorbidities and complaints of weight loss(3-4kgs), shortness of breath on exertion, leg swellings from 2-3 months and fatigue, facial puffiness and loss of appetite admitted to department of Internal medicine at tertiary care hospital. He had no complaints of chest pain, decreased urine output, fever, cough, Malena, and abdominal pain, vomiting& diarrhea. he was suffered from fever and body pains One and half months

**Corresponding Author:- Dr. K. Shivaraju**

Address:- Head of the Department of Internal medicine, Krishna Institute of Medical Sciences, Hyderabad Telangana-500003.

back for 2 weeks. at that time undergoing series of investigations in that, RT PCR was negative and CT chest was normal and he was treated with appropriate medications but fever spikes continued. again CT chest was done but found to be normal. D-dimer, CRP, serum ferritin significantly elevated and IgG covid antibody positive but IgM covid antibody negative. Based on all investigations diagnosed as long covid or post covid. ANA profile was found to be negative and PET scan whole body negative for malignancy. at last fever spikes responded to oral steroids and tapered over to 2-4 weeks. Now he was admitted to a tertiary care hospital for further management presented with above complaints. in the hospital he was underwent some laboratory and imaging investigations, based on findings initially diagnosed with moderate anemia (Hb 4.3gm/dl) and acute kidney injury (serum creatinine 4.6mg/dl). After that multiple prbc were transfused uneventfully. hemoglobin was improved(8gms) but serum creatinine elevated from 4.6-5.3 mg/dl. Then planned for dialysis by nephrologist opinion, dialysis underwent uneventfully. Then he was advised for some investigations like C3 & C4, Anti dsDNA, C-ANCA, P-ANCA, and anti GBM. All were found to be negative and also other causes of acute kidney injury were ruled out like multiple myeloma(light chain assays normal) and vasculitis (ANCA Negative).Totally dialysis procedure underwent for 5 days. At last, the renal biopsy was done, in that diagnosed with rapid progressive glomerulonephritis (RPGN) or Pauci immune crescentic glomerulonephritis. After that, treated with appropriate medications like glucocorticoids, immunosuppressants(cyclophosphamide), and other supportive medications. Then patient condition was slowly improved and discharged with appropriate medications and advised for regular dialysis.



**Fig1:-** Kidney Biopsy revealed crescents with glomerulonephritis.

### **Discussion:-**

Crescentic glomerulonephritis is a severe glomerular injury characterized by the rupture or destruction of the glomerular basement membrane (GBM); this damage is often accompanied by fibrinoid necrosis, which leads to cellular proliferation in bowman's space.

According to direct immunofluorescence microscopy crescentic glomerulonephritis is divided into three main categories. one is anti GBM crescentic glomerulonephritis which is described by the appearance of circulating antibodies against GBM and linear deposition of IgG throughout GBM. second one is described by the immune complex deposition in the glomeruli.it is called as immune complex-mediated crescentic glomerulonephritis. is the most common cause of RPGN in children. another one is Pauci immune crescentic glomerulonephritis, it is the most common cause of RPGN in adults and geriatrics (2).

antineutrophil cytoplasmic antibodies absence in 10-30% of pauci-immune crescentic glomerulonephritis patients approximately. ANCA negative Pauci immune crescentic glomerulonephritis may be a different disease entity compared to ANCA positive pauci-immune crescentic glomerulonephritis.

Neutrophils are thought to play an important role in the pathological process of ANCA negative pauci-immune crescentic glomerulonephritis. No prospective controlled studies have been performed on the treatment of ANCA negative pauci-immune crescentic glomerulonephritis patients. Therefore, treatment regimens are often based on ANCA positive patients.

Patients with ANCA negative Pauci immune crescentic glomerulonephritis had poor renal outcomes than their ANCA positive. Patients with ANCA negative pauci immune crescentic glomerulonephritis have a different clinical picture than patients with ANCA positive disease with fewer constitutional and extrarenal clinical manifestations. The lack of ANCA could be the reason for these differences. ANCA negativity appears to be associated with increased severity of glomerular lesions and poor renal outcomes. So ANCA negativity should be considered, when evaluation or treating patients with Pauci immune crescentic glomerulonephritis. Renal impairment is relatively common in patients affected by covid-19 infection, especially in those with critical illness (1).

Here we discussing a case of 76-year-old male patient diagnosed with ANCA negative pauci-immune crescentic glomerulonephritis.

Nupur N Uppal et al, presented two cases of ANCA-associated pauci immune crescentic glomerulonephritis associated with covid-19 infection. Both two cases ANCA-associated. one is P-ANCA positive and one is C-ANCA positive contrary to our case, patient found to be ANCA negative (2).

Tugba Izci Duran et al, presented two cases of Pauci immune crescentic glomerulonephritis after a diagnosis of covid-19 or post covid. but in both cases were ANCA associated cases (one is P-ANCA and another one is C-ANCA positive) (3). but in our case, ANCA found to be negative.

Moeinzadeh et al, report a case of 25 years old male patient diagnosed with ANCA positive pauci-immune crescentic glomerulonephritis associated with covid-19 infection but in our case, we found ANCA negative pauci-immune crescentic glomerulonephritis with long/post covid-19 infection (4).

Federica maritah et al, report a case of 64 years old women with hypertension diagnosed as covid-19 infection and ANCA positive pauci-immune crescentic glomerulonephritis and antiphospholipid syndrome but in our case contrast to ANCA found to be negative and no antiphospholipid syndrome and no history of hypertension (5).

Jalalzadeh M et al, report a case of 46 years old female with type 2 DM and scleroderma diagnosed with covid-19 infection and same time P-ANCA positive and biopsy revealed that crescentic glomerulonephritis (6). But in our case, we found negative ANCA pauci-immune crescentic glomerulonephritis with long covid infection and absence of scleroderma.

Sekar, Arjun et al, report case of ANCA associated glomerulonephritis after the Moderna covid-19 vaccination (7). but in our case, there is no history of covid-19 vaccination and ANCA was found to be negative.

Pauci immune crescentic glomerulonephritis in patients with covid-19 is anecdotal.

Association between ANCA negative pauci immune crescentic glomerulonephritis and covid-19 should remain unclear and have not yet been reported. Therefore, more studies are required for finding an association of link between these two conditions.

### **Conclusion:-**

ANCA negative Pauci immune crescentic glomerulonephritis associated with long/post covid-19 has not yet been reported. So based on this case we highlighted that diagnosis of this condition is the major hurdle for clinicians when the patient is suffering long/post covid-19 with acute kidney injury. So, this case alerts the clinicians to consider this condition associated with long/post covid-19 when abnormal renal function is present. Finally, we concluded that early diagnosis and close monitoring of renal function with aggressive treatment may prevent

irreversible damage to kidneys. Regular monitoring of kidney function is imperative in long/post covid patients to diagnose acute kidney injury.

**References:-**

1. Chen M, Kallenberg CGM, Zhao M-H. ANCA-negative pauci-immune crescentic glomerulonephritis. *Nat Rev Nephrol.* 2009;5(6):313–8.
2. Uppal NN, Kello N, Shah HH, Khanin Y, De Oleo IR, Epstein E, et al. De Novo ANCA-associated vasculitis with glomerulonephritis in COVID-19. *Kidney Int Rep.* 2020;5(11):2079–83.
3. Izci Duran T, Turkmen E, Dilek M, Sayarlioglu H, Arik N. ANCA-associated vasculitis after COVID-19. *Rheumatol Int.* 2021;41(8):1523–9.
4. Moradi H, Naimi A, Moeinzadeh F. Response to comment on; Newly diagnosed glomerulonephritis during COVID-19 infection undergoing immunosuppression therapy, a case report. *Iran J Kidney Dis.* 2020;14(4):326–8.
5. Maritati F, Moretti MI, Nastasi V, Mazzucchelli R, Morroni M, Bagnarelli P, et al. ANCA-associated glomerulonephritis and anti-phospholipid syndrome in a patient with SARS-CoV-2 infection: Just a coincidence? *Case Rep Nephrol Dial.* 2021;11(2):214–20.
6. Jalalzadeh M, Valencia-Manrique J C, Boma N, et al. (January 04, 2021) Antineutrophil Cytoplasmic Antibody-Associated Glomerulonephritis in a Case of Scleroderma After Recent Diagnosis With COVID-19. *Cureus* 13(1): e12485. doi:10.7759/cureus.12485.
7. ANCA glomerulonephritis after the Moderna COVID-19 vaccination Sekar, Arjun et al.
8. *Kidney International*, Volume 100, Issue 2, 473 - 474.