

Neutropenic fever in COVID-19 in kidney transplant patient

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To the Editor:

We found no published works reporting COVID-19 infection presenting as neutropenic fever in renal transplant adult patients. We report the first case.

On March 18, 2020, a 33-year-old female presented to our hospital with chief complaint of dry cough and dyspnea for 5 days prior to admission that progressively gotten worse. She had fever (temperature of 38.3°C) and malaise. She had End Stage Renal Disease (ESRD) and had Living Unrelated Kidney Transplant in February of 2019. She travelled to Ghana for medical mission trip with layover in Paris on March 6th. Physical exam was remarkable for bilateral crackles in her lungs and labored respiration. Labs showed low white blood cell (absolute neutrophil count of 0.8 k/cumm). A nasopharyngeal/oropharyngeal swab specimen was obtained and sent for detection of COVID-19. Rapid flu A/B test and HIV-1/-2 Ab/HIV Ag QL were negative. CMV IgG EIA QN and EBV VCA IgM EIA were not checked during this admission. Computerized tomography scan of chest showed new patchy peripheral interstitial and airspace opacities with air bronchograms within both lungs. The PCR for COVID-19 came back positive (confirmed by COVID-19 GeneXpert detection) on March 19, 2020. The patient was initiated on Hydroxychloroquine 400 mg po twice a day for 1 day then 200 mg twice a day for total 5 days. Given her immunosuppressed status with COVID-19 associated with neutropenic fever, she was given Cefepime for 5 days and Azithromycin for 3 days. Home medications were continued including Fluticasone and Salmeterol Diskus, Ferrous Gluconate, Malarone (Atovaquone and Proguanil), Montelukast, Tacrolimus, Acetaminophen, Albuterol HFA, Ondansetron and Cetirizine. The patient was not on ACE inhibitor due to the fact she had history of angioedema. She was given IVF in the form of Sodium Chloride 0.9% at 100 mL/hour. Her Mycophenolic acid was stopped when her COVID-19 test came back positive and her Tacrolimus dose was adjusted to achieve a level of 3-5 ng/mL.

Her creatinine, WBCs, platelets and hemoglobin dropped during her hospitalization (Figure 1). The patient improved and was discharged home on March 24, 2020. She was placed on self-quarantine till April 17, 2020. The patient's symptoms resolved on April 30, 2020 with both clinical and laboratorial improvement.

1 DISCUSSION

The clinical spectrum of SARS-CoV-2 infection appears to be wide, encompassing asymptomatic infection, mild upper respiratory tract illness and severe viral pneumonia with respiratory failure and even death.¹⁻⁵ Transplant patients are felt to be at higher risk as immunosuppression, underlying CKD and other co-morbidities are now recognized as significant factors that influence outcomes in patients with COVID 19 infection.^{4, 5} Most of those patients had fever and lymphopenia. Those patients had more rapid clinical progression and very high early mortality as compared with general population infected with COVID-19.⁵

This is the author's manuscript of the article published in final edited form as:

Al-Makki, A., & Taber, T. (2020). Neutropenic fever in COVID-19 in kidney transplant patient. *Reviews in medical virology*, e2156. <https://doi.org/10.1002/rmv.2156>

Our patient had multiple comorbidities (immunosuppression, obesity, HTN and asthma), worsening symptoms and pneumonia upon presentation and despite that had a favorable outcome after treatment. Our case supports recent recommendations that immunosuppression be lowered but not discontinued. This is the first reported case of COVID-19 presenting with neutropenic fever. Other reasons cannot be ruled out, but we could not find another explanation and hope future studies and case series will pay attention to neutropenic fever in transplant patient with COVID-19. The kidney function improvement is either sign of good prognosis or might have protective effect against COVID-19 and worth studying as well.

CONFLICT OF INTEREST

Non conflict of interest.

AUTHOR CONTRIBUTIONS

Akram Al-Makki: First author and corresponding author. Designed the manuscript, collected data and wrote the Manuscript.

Tim Taber: Second author. Reviewed the paper, analyzed it and contributed to part of manuscript.

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FIGURE 1

The graphs show drop in white blood count (WBC) and creatinine during the symptomatic active phase of COVID-19 infection in our patient. Note improvement at recovery of WBCs after treatment. Source: Cerner Electronic Medical Records, IUH Arnett Hospital, Lafayette, IN, United States

