Impact of Covid-19 mRNA Vaccine on a Renal Transplant patient: A case report

Usama Habib, MBBS MD • Mahmoud Abdelslam, MD • Talha Mehmood, MD • Department of Internal Medicine, Conemaugh Memorial Medical Center, Johnstown, PA

Introduction
The data regarding the efficacy of the Covid-19 vaccine in transplant patients remain limited, especially the risk of the breakthrough infections. To the best of our knowledge, this is the first case report of a vaccinated renal transplant surviving severe Covid-19 pneumonia.

History of Presenting Illness
A 73-year-old Caucasian male allogenic renal transplant on Mycophenolate mofetil and tacrolimus vaccinated with Moderna mRNA worsening shortness of breath due to COVID-19 pneumonia.

Examination
- Tachypnea (34)
- Tachycardia (110)
- Hypotension (95/65mmHg)
- SaO2 of 85% on BiPAP
- Auscultation - decreased breath sounds
- Diffuse Rales

Lab Work-up and Imaging
- Ferritin 940 ng/dL (N 15-360)
- Fibrinogen> 600 mg/dL (N 15-360)
- ESR 76 mm/h (N 0-20)
- CRP 23.2 mg/dL (N 0.0-0.8)
- Procalcitonin 0.89 (N 0.00 - 0.05)
- D-dimer 0.5 mg/L (N <0.5)
- LDH 395 units/L (N 125-243)
- Lactate 2.4 mmol/L (N 0.5-2.0)
- WBCs 10.65 (N 3.10 – 8.5 x10^3/μL)
- Hb 13.3 (14-18 g/dL)
- PLT 246 (N140-440 10^3/μL)
- BUN 62 (N 8-26mg/dL)
- Creatinine 2.0 (N 0.5-1.3 mg/dL)
- Chest X-ray diffuse interstitial and alveolar opacities

Intubated for mechanical ventilation
Remdesivir (200mg x1, 100mg OD x 4days)
Dexamethasone 6mg BD x 5days, 6mg ODx5days
Vancomycin and Zosyn empirically
AKI: Tacrolimus dose from 2.5mg to 7mg BD
Mycophenolate mofetil: discontinued
Tocilizumab: Not a candidate

Decreased oxygen requirement
Extubated to BiPAP
High flow heated nasal canula
AKI resolved
4L 02 nasal cannula

Discussion & Conclusion
1. Preliminary results from SARS-CoV-2 Vaccine trial in transplant patients:
   - 1/3 Immune non-responsive
   - 2/3 partially immune responsive [1] [2]
   - Safety data and efficacy of adjuvant zoster vaccine in transplant patients can be extrapolated to the COVID-19 vaccine [3].
2. Conventionally Method - the dose of immunosuppressants is decreased to prevent serious infections however it increases inhospital mortality in COVID patients [4].
   - Non-conventional Intervention Hypothesis, increasing the Tacrolimus level help prevent transplant rejection and the cytokine storm associated with sever COVID disease.

Further Information
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7320855/

www.conemaugh.org

Fig 1(L): IL-2 receptor pathway.
Fig 2(R): X ray chest on presentation.