

**Case Report**
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## REGEN-COV™ (Casirivimab and Imdevimab) along with Molnupiravir InStage- V CKD Patient with Symptomatic COVID-19 Pneumonia: A Case Report

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**ABSTRACT**

Combination of two human monoclonal antibodies, Casirivimab and imdevimab, commonly termed as Cocktail therapy recommended for the treatment and prevention of COVID-19. It is administered as an infusion or subcutaneous injection. Molnupiravir is an antiviral medication that inhibits the replication of certain RNA viruses. There is very limited data available regarding co administration of oral Molnupiravir along with intravenous REGEN-COV™ (Casirivimab and imdevimab) in CKD patient. Here, we report the successful outcome of REGEN-COV™ along with oral Molnupiravir in a CKD Stage V hospitalized patient with Symptomatic COVID-19 Pneumonia.

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**Introduction**

On 21 November 2020, US Food and Drug Administration (FDA) approved REGEN-COV™ (Casirivimab and imdevimab) combination for the treatment of mild to moderate COVID-19 [1]. Since then it is now being used in patients who are at high risk for progressing to severe COVID-19. The combination of two antibodies is intended to prevent mutational escape [2]. The antiviral drug Molnupiravir inhibits viral replication of certain RNA viruses [3]. Molnupiravir was approved for medical use in the United Kingdom in November 2021 [4]. Patients with CKD stage V who are waiting for starting maintenance hemodialysis are always considered to be in a great risk of severe COVID-19 pneumonia. Additional co-morbidities like Type 2 DM, Uncontrolled systemic HTN and IHD and Acute LVF always make it difficult with worse outcome. A promising approach to combat the COVID-19 pandemic involves development of antiviral antibodies targeting the spike protein of SARS-CoV-2. The spike protein is a key mediator of viral infectivity required for attachment and entry into target cells by binding the ACE2 receptor [5, 6]. Molnupiravir is a prodrug of the synthetic nucleoside derivative N4-hydroxycytidine and exerts its antiviral action through introduction of copying errors during viral RNA replication [7]. In a clinical trial of people with COVID-19, Casirivimab and imdevimab, administered together, were shown to reduce COVID-19-related hospitalization or emergency room visits in people at high risk for disease progression within 28 days after treatment when compared to placebo [8]. The efficacy and safety of Molnupiravir in CKD patient with mild or moderate COVID-19 is still a less explored area. On top of that combined Effectiveness of this cocktail therapy (Casirivimab and Imdevimab) along with oral Molnupiravir for

use in the treatment of COVID-19 in a CKD stage V patient may become a new hope for the future.

**Case Report**

A 52-year-old male with known CKD for 3 years was referred with accelerated HTN, shortness of breath, reduced urine output and gradual swelling of the whole body for 2 weeks prior admission to the hospital. His additional co morbidities are Systemic HTN, Type 2 DM, and IHD and Renal anemia. Recently his creatinine was gradually creeping up to around 8 mg/dl. After admission to hospital on 14th December, 2021 he was found to have bi-pedal oedema, bilateral basal crepitation, anemic with 97% oxygen saturation in room air. His Blood pressure was 180/100 mmHg. On admission his serum creatinine was 8.8 mg/dl which was further raised to 9.7 mg/dl on 18th December, 2021. On 21st December, 2021 both his Covid-19 Rapid Antigen Test and RT PCR for COVID-19 reported positive. On the same date his C-reactive protein value was 54.5 mg/L, IL-6 Interleukin-6 was 13.19 pg/ml and serum LDH was 365 U/L. Chest X ray was revealed bilateral ground glass lung field opacities with small effusion on the right side.

IV dexamethasone, S/C LMWH, oral N Acetyl cysteine, oral Rivaroxaban was started on the same day. Patient was receiving oxygen by face mask @ 6-10 L/min to maintain oxygen saturation. From the same day patient was started Tab Molnupiravir 200 mg 4 tablets 12 hourly for the next 5 days up to 26th December. On 22nd December, 2021 patient was infused with Casirivimab and Imdevimab, 600 mg of each drug after mixing it with 100 ml saline over one hour. Proper counseling was done and informed written consent was taken prior infusing the drugs. From the next day oxygen demand was dropping down and patient shown both clinical and radiological improvements. His IL-6 was dropped down

to 5.18 pg/ml on 27-12-2021. He started to produce significant amount of urine and serum creatinine level dropped down to 8.4 mg/dl. His breathlessness improved and oxygen saturation maintained with no additional oxygen supplement. Patient's RT PCR for COVID- 19 became negative on 28th December, 2021. He was discharged on 29th December and advised to have follow up at outpatient department after one week.

The patient recovered from symptomatic COVID-19 Pneumonia rapidly without further deterioration of renal function and without experiencing any further significant side effects except abdominal flatulence and discomfort which can be incidental and may be not related with Cocktail Therapy (Casirivimab and imdevimab) or Oral Molnupiravir.

### Discussion

CKD always create a practical challenge in treating patients who also developed COVID -19 pneumonia as drugs effects are always variable due to altered renal clearance. Additional volume overload is also very common in CKD stage V diseases, which worsens pneumonia further. Co-morbidities are also very much common in CKD like Systemic HTN, DM and IHD complicating the management approaches. Study showed Casirivimab-Imdevimab treatment is associated with reduced rates of hospitalization among high- risk patients with mild to moderate coronavirus disease [9]. Molnupiravir is a prodrug of beta-d-N4-hydroxycytidine has significant activity against SARS-CoV-2 by inhibiting RNA-dependent RNA polymerase [10].

Available data for the Use of cocktail therapy along with co administration of oral Molnupiravir in CKD is still rare. This experience of managing advanced CKD patient with COVID may be use of physicians interested in COVID treatment.

### Conclusion

Combination of Cocktail therapy with (Casirivimab and imdevimab) with oral Molnupiravir is safe and effective in the management COVID -19 in CKD. Future controlled studies can confirm the finding of this case report.

### References

1. Coronavirus (COVID-19) Update: FDA Authorizes Monoclonal Antibodies for Treatment of COVID-19 (2020) Available at: <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-monoclonal-antibodies-treatment-covid-19>.
2. Baum A, Fulton BO, Wloga E, Copin R, Pascal KE, Russo V, et.al. (2020) Antibody cocktail to SARS-CoV-2 spike protein prevents rapid mutational escape seen with individual antibodies. *Science* 369: 1014-1018.
3. "Summary of Product Characteristics for Lagevrio". Medicines and Healthcare products Regulatory Agency (MHRA) (2021).
4. Jayk Bernal A, Gomes da Silva MM, Musungae DB, Kovalchuk E, Gonzalez A, et.al.(2021). Molnupiravir for Oral Treatment of Covid-19 in Nonhospitalized Patients. *N Engl J Med.* PMID: 34914868.
5. Hansen J, Baum A, Pascal KE, Russo V, Giordano S, et.al. (2020) Studies in humanized mice and convalescent humans yield a SARS-CoV-2 antibody cocktail. *Science* 369: 1010-1014.
6. Lau SY, Wang P, Mok BW, Zhang AJ, Chu H, et.al. (2020) Attenuated SARS-CoV-2 variants with deletions at the S1/S2 junction. *Emerg Microbes Infect* 9: 837-842.
7. Toots, M., Yoon, J. J., Cox, R. M., Hart, M., Sticher, Z. M., et al. (2019) Characterization of orally efficacious influenza drug with high resistance barrier in ferrets and human airway epithelia. *Science translational medicine*. <https://doi.org/10.1126/scitranslmed.aax5866>
8. "Coronavirus (COVID-19) Update: FDA Authorizes Monoclonal Antibodies for Treatment of COVID-19". U.S. Food and Drug Administration (FDA) (Press release) (2020) Public Domain this article incorporates text from this source, which is in the public domain.
9. Razonable RR, Pawlowski C, O'Horo JC, Arndt LL, Arndt R, et.al.(2021) Casirivimab-Imdevimab treatment is associated with reduced rates of hospitalization among high-risk patients with mild to moderate corona virus disease-19. *EClinicalMedicine* 40: 101102.
10. Ching-Chi Lee, Chih-Chia Hsieh, Wen-Chien Ko (2020) Molnupiravir-A Novel Oral Anti-SARS-CoV-2 Agent. *Antibiotics* 10: 1294.

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