

OUTCOME OF MOLNUPIRAVIR TREATMENT IN RENAL TRANSPLANT PATIENTS WITH COVID-19

Marcela Heislerová¹, Michaela Matysková Kubišová^{2,3}, Anita Pokorná^{2,3}, Roman Šafránek^{2,3}, Petr Moučka², Igor Guňka^{3,4}, Martina Novosadová¹, Petra Rozsivalová^{1,5}, Sylvie Dusilová Sulková^{2,3}

1) Hospital Pharmacy, University Hospital Hradec Kralove, Czech Republic

2) Department of Nephrology, University Hospital Hradec Kralove and Faculty of Medicine, Charles University in Hradec Kralove, Czech Republic

3) Interdisciplinary Transplantation Centre, University Hospital Hradec Kralove and Faculty of Medicine, Charles University in Hradec Kralove, Czech Republic

4) Department of Surgery, University Hospital Hradec Kralove and Faculty of Medicine, Charles University in Hradec Kralove, Czech Republic

5) Department of Social and Clinical Pharmacy, Faculty of Pharmacy, Charles University in Hradec Kralove, Czech Republic

1. Background and Importance

Recent global guidelines recommend systemic antivirals for adults at increased risk of severe COVID-19, highlighting nirmatrelvir/ritonavir (Paxlovid) and remdesivir (Veklury) as preferred treatments for post-organ transplant patients. Molnupiravir (Lagevrio), despite being unlicensed, emerges as an alternative, albeit with a notably lower efficacy profile.

2. Aims and Objectives

Our study evaluates the efficacy and safety of molnupiravir in post-kidney transplant (KTx) COVID-19 patients within our institution, aiming to provide empirical data to guide therapeutic decisions for this vulnerable population.

3. Materials and Methods

- Study design:** A single-centre **retrospective cohort study** of in **post-KTx adult patients** treated for COVID-19 with molnupiravir in Department of Nephrology in a tertiary hospital from December 24th, 2021 to December 30th, 2022, a period marked by the predominance of the Omicron variant.
- Medication adjustments:** Immunosuppressive regimens were uniformly modified, including an increase in prednisone dose (up to 20 mg for 2-3 weeks).
- Exclusion criteria:** Non-KTx patients and the pediatric patients.
- Data collection:** Recorded variables from electronic medical records included demographics, comorbidities, vaccination status, KTx characteristics, SARS-CoV-2 positivity and COVID-19 symptoms. Graft function and rejection risk were assessed via serum creatinine levels and proteinuria routinely sampled. Follow-up period was 19 months (range 15-22).
- Data analysis:** Utilized MS Excel and ChatGPT v.4 for descriptive statistics, with further inferential analysis via R and non-parametric testing (Wilcoxon).

4. Results

- A total of **93 KTx patients** (62; **66.7% males**) with a **mean age 56 years (SD 12.9)** were included (Fig.1). The most common comorbidity was **diabetes mellitus type 2** (36 patients; **38.7%**).

- A majority (**89.0%**) of patients were after **the first KTx** (Tab. 1) and 71 (**76.3%**) patients received **COVID-19 vaccination** (Tab.2).
- COVID-19 symptoms appeared with a mean of **8 years (SD 6.5)** since KTx (Fig. 2).
- The patients received molnupiravir with a mean of **2.24 days (SD 1.67) since confirmation of SARS-2-positivity**.
- During the follow-up neither significant increase in proteinuria, nor acute nor new chronic graft rejection were observed and the **kidney graft function was stable**.
- Serum creatinine was 124 (106-159) $\mu\text{mol/l}$ before COVID-19 disease vs. 128 (101-161) $\mu\text{mol/l}$ at the end of the follow-up. **The difference** in median creatinine values **before and after molnupiravir** therapy was **not statistically significant** ($p = 0.8175$).
- Only **3.2% of patients** had to be **hospitalized due to COVID-19**, mortality was 1%.
- Acute kidney injury was observed only in 2.2% of patients.
- Short-term discontinuation or modification of immunosuppression did not induce any rejection episode.

5. Conclusion

Our findings suggest that **early molnupiravir treatment**, with adjusted immunosuppressive therapy, offers **effective and safe COVID-19 management in kidney transplant patients**, ensuring good graft function and avoiding rejection. Molnupiravir's lack of drug-drug interactions, notably with calcineurin inhibitors, positions it as a drug of choice over Paxlovid, especially suitable for outpatient care. Molnupiravir has been available under Emergency Use Authorisation in the Czech Republic and represents antiviral of choice mainly for kidney transplant outpatients.

References:

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Correspondence: heislerova@ipvz.cz

Table 1: Kidney transplant characteristics in our cohort (n = 93 = 100.0%)

Category	Total Patients	Women	Men	Percentage of Total
Donor type (n=93=100.0%)				
Living Donors	5	2	3	5.4%
Cadaver Donors	88	29	59	94.6%
Number of kidney transplants				
First Transplant	83	29	54	89.2%
Second Transplant	10	2	8	10.8%

Table 2: COVID-19 vaccination in our cohort of kidney transplant patients (n = 93 = 100.0%)

Vaccination Status	Patients vaccinated
Vaccinated	71 (76.3%)
Not Vaccinated	4 (4.3%)
Vaccination Unknown	18 (19.4%)
Detailed vaccination data (n=71=100.0%)	
Two or More Doses	63 (88.7%)
Only One Dose	1 (1.4%)
Number of Doses Unknown	7 (9.9%)

Fig. 1: Age profile in kidney transplant outpatients with COVID-19 and molnupiravir therapy

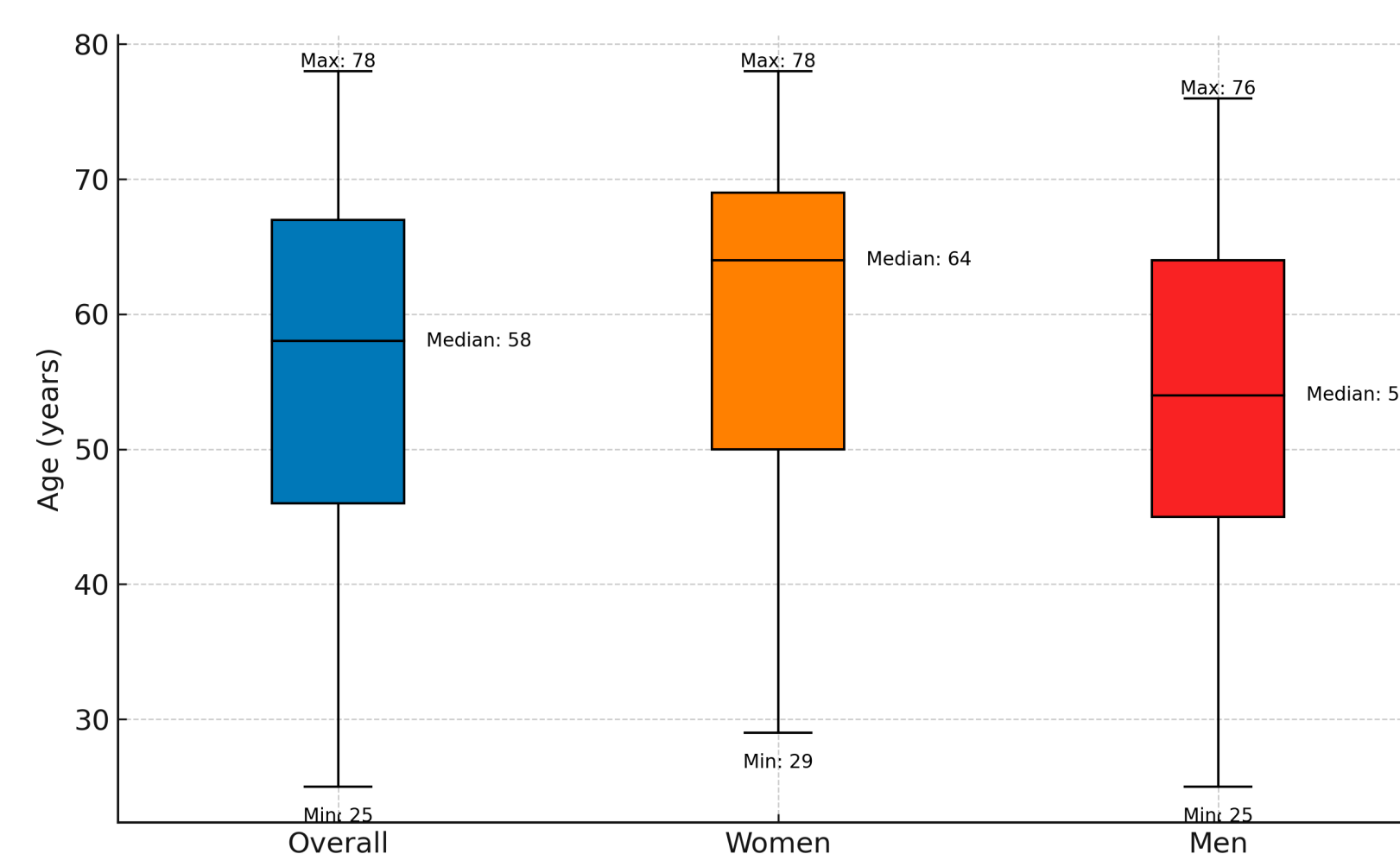


Fig. 2: COVID-19 symptom onset in years since kidney transplantation

