Association between everolimus time-in therapeutic range and change in renal function in lung transplant recipients

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INTRODUCTION

- The role of everolimus in solid organ transplantation is often to reduce overall exposure to CNI therapy and prevent significant renal damage
- This renal-sparing strategy intends to allow for comparable levels of effective immunosuppression while decreasing exposure to CNI toxicity
- In clinical practice, everolimus is often dosed based on its trough levels measured in patients, with a specific goal therapeutic range of 3-8 ng/mL.

OBJECTIVE

To evaluate the association between time in therapeutic range (TTR) of everolimus and renal function in lung transplant recipients.

METHODS

Study Design
- Retrospective cohort, IRB-approved, study of everolimus TTR in lung transplant recipients at UPMC Presbyterian.

Inclusion/ Exclusion Criteria
- **Inclusion:** 18 years and older, received a lung transplant between January 1, 2011 to December 31, 2021, with at least 2 everolimus levels within the first year of everolimus initiation
- **Exclusion:** Diagnosis code for ESRD or received dialysis during time of everolimus initiation

Data
- All data were extracted from Electronic Health Record and de-identified by an honest broker
- Index Visit: demographics, date of first everolimus level, baseline laboratory values after first everolimus level
- Follow-Up: laboratory values 1 year after first everolimus level
- Rosendaal's linear interpolation method was utilized to determine TTR of everolimus to evaluate its effect on the primary endpoint
- Patients were categorized into 4 groups based on the statistical 25th, 50th, and 75th percentile of TTR.

Primary Endpoint
- Change in serum creatinine from time of everolimus initiation to 1 year across TTR quartiles

Statistical Analysis
- IBM SPSS Version 29
- Descriptive statistics were used to assess the study population at baseline
- A Pearson Correlation Coefficient was used to evaluate the association between changes in serum creatinine from baseline to 1 year and percent TTR
- The Kruskal-Wallis Test was used to evaluate change in serum creatinine across TTR quartiles.

RESULTS

Figure 1. Inclusion and Exclusion Criteria

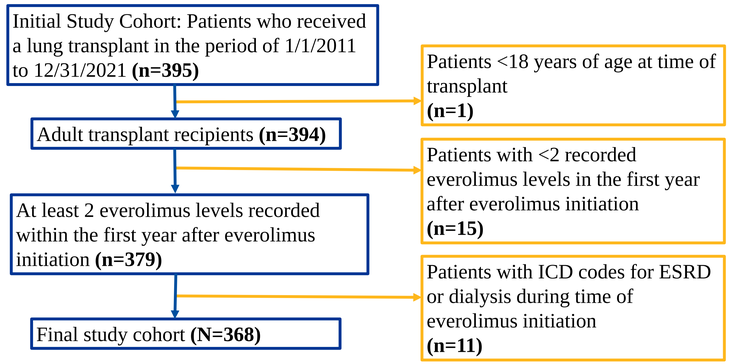
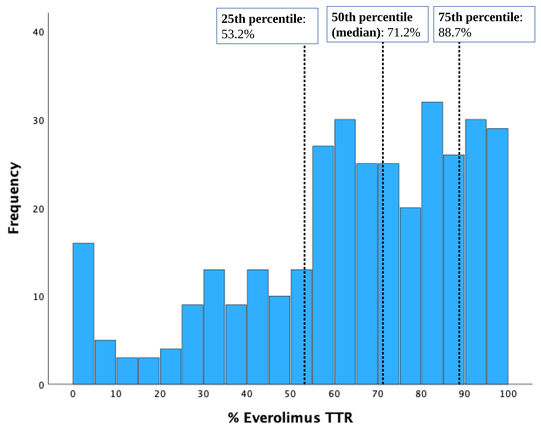


Table 1. Baseline Characteristics

Characteristic	Cohort (N=368)
Age, median (IQR)	58 (47-65)
Female sex, n (%)	158 (42.9)
White race, n (%)	334 (90.8)
Double lung transplant, n (%)	320 (87.0)
Reason for transplant, n (%)	
Cystic fibrosis	51 (13.9)
COPD	92 (25.0)
Pulmonary fibrosis	103 (28.0)
Other	122 (33.2)

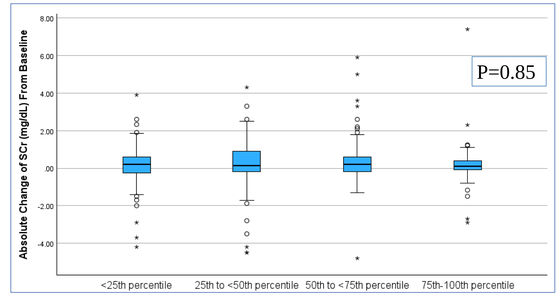
Figure 2. Distribution of everolimus time in therapeutic range



RESULTS

- Median number of everolimus levels collected for each patient was 10 (IQR 5 to 24)
- Median absolute difference in serum creatinine from baseline (mg/dL) was 0.1 (IQR -0.1 to 0.6)
- Pearson correlation constant between everolimus percent TTR and absolute difference in serum creatinine was 0.046 (p=0.383)

Figure 3. Absolute difference in serum creatinine from baseline to 1 year after everolimus initiation



LIMITATIONS

- Retrospective, single-center study design
- Did not evaluate concomitant medications used during study period
- Variability in number of everolimus levels and initiation date per patient

CONCLUSIONS

- In this cohort of patients receiving everolimus, a minimal change in serum creatinine was observed from baseline to 1 year after initiation
- Increasing everolimus percent TTR was not associated with significant differences in change in renal function

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DISCLOSURES

Bethany Corry, Ian Montelius, Carolyn Ross, Mary Zhuang, and Carlo Iasella do not have any disclosures relevant to this study.

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