Inpatient Resource Use and Cost of Hospitalization for KTP Surgery Among Recipients with vs. without Autosomal Dominant Polycystic Kidney Disease

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Background

- Autosomal dominant polycystic kidney disease (ADPKD) is a genetic condition accounting for 5-10% of patients diagnosed with end-stage renal disease (ESRD) in the US and Europe.[1-3]
- While dialysis prolongs life, kidney transplant (KTP) is the first-line treatment for patients with ESRD due to ADPKD.[4]
- ADPKD patients have a higher rate of kidney transplantation (KTP) within the first year of initiating dialysis compared to the total ESRD population in the US.[1]
- Inpatient resource use and cost outcomes of patients with ADPKD and receiving KTP are limited.

Objectives

- To assess differences in patient demographics, comorbidities, inpatient resource use, and cost outcomes among KTP recipients with vs. without ADPKD at date of KTP.

Methods

Study Design & Data Source

- A case-cohort analysis of patients with hospitalization for KTP surgery between 01Jan2018-31Dec2018 in the Premier Healthcare Database (PHD). (Figure 1)

Sample Population

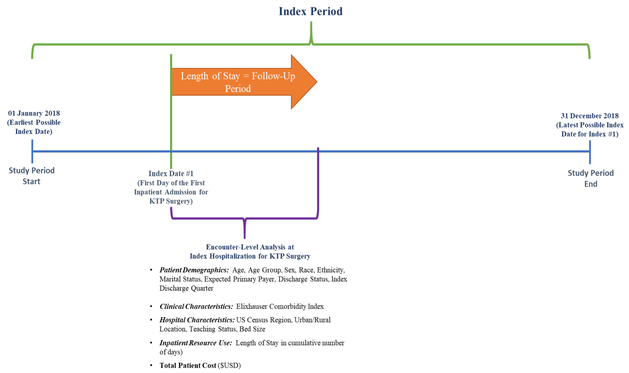
- ***Inclusion Criteria:*** Inpatients ≥18 years old at KTP and distinguished as cases if presence of ADPKD and/or PKD-Unspecified was observed.
- ***Exclusion Criteria:*** Inpatients were excluded if autosomal recessive polycystic kidney disease (ARPKD) diagnosis was observed.

Outcomes

- ***Patient Demographics:*** Age, Age Group, Sex, Race, Ethnicity, Marital Status, Expected Primary Payer, Discharge Status, Index Discharge Quarter
- ***Clinical Characteristics:*** Elixhauser Comorbidity Index
- ***Inpatient Resource Use:*** Length of Stay in cumulative number of days
- ***Total Patient Cost*** ($USD)

Methods (Continued)

Figure 1. Study Schematic



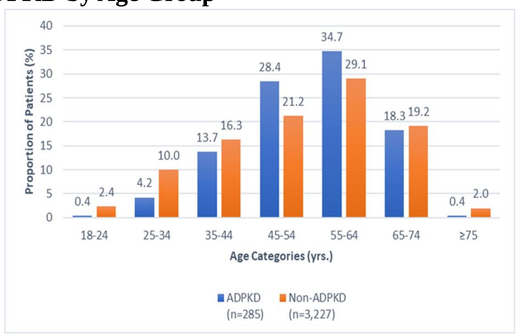
Descriptive Analyses

- Demographics, comorbidities, length of stay [LOS], and total patient cost at hospitalization for KTP surgery were compared for those with vs. without ADPKD using the chi-square to test proportional differences and the Wilcoxon Signed-Rank Sum test to test median differences with alpha level set at ≤ 0.05.

Results

- Among 3,512 KTP recipients (ADPKD=285 vs. non-ADPKD=3,227), there was no difference in median (IQR) age (56 [47-62] vs. 55 [43-63] years old; p = 0.1658).
- A higher proportion of KTP recipients with ADPKD were aged 55-64 (35% vs. 29%) and 45-54 (28% vs. 21%) years old (p < 0.0001). (Figure 2)

Figure 2. Proportion of Recipients with vs. without ADPKD by Age Group

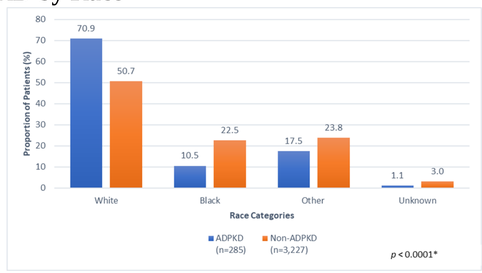


- A higher proportion of KTP recipients with ADPKD were female (46% vs. 38%; p = 0.0050).

Results (Continued)

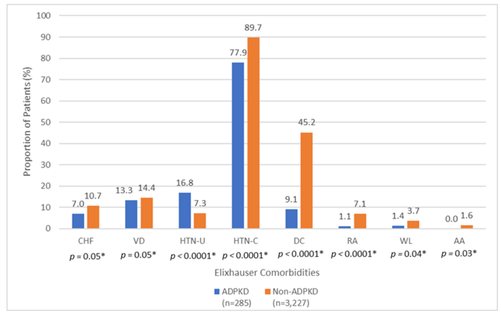
- A significantly higher proportion of recipients with ADPKD were White (71% vs. 51%). (Figure 3)
- A significantly higher proportion of recipients without ADPKD were of racial minority (Other [24 vs. 18%] and Black [23% vs. 11%] race). (Figure 3)

Figure 3. Proportion of KTP Recipients with vs. without ADPKD by Race



- KTP recipients with ADPKD had a lower comorbidity burden and better health status even though a higher proportion had uncomplicated hypertension (17% vs. 7%; p < 0.0001). (Figure 4)

Figure 4. Comorbidities Among KTP Recipients with vs. without ADPKD at Index Discharge for KTP Surgery



- The median (IQR) LOS (4 [4-6] vs. 5 [4-7] days; p = 0.0006) and total patient cost ($103,000 [$72,000-$128,000] vs. $113,000 [$75,000-$139,000]; p = 0.0010) were significantly lower among recipients with ADPKD. (Table 1)

Table 1. Inpatient Resource Use Outcomes Among Recipients with vs. without ADPKD at Index Discharge for KTP Surgery

Data Element	Estimates			
	Total Sample (N=3,512)	ADPKD (n=285)	Non-ADPKD (n=3,227)	p value
LOS, cumulative number of days				
Median (IQR)	5 (4 - 7)	4 (4-6)	5 (4-7)	0.0006*
Total Costs, $USD				
Median (IQR)	$112,123.83 ($74,865.34 – $137,314.36)	$102,940.74 ($72,312.10 – $127,647.76)	$112,940.57 ($75,308.88 - $138,577.07)	0.0010*

Abbreviations: ADPKD-autosomal dominant polycystic kidney disease, IQR-interquartile range, KTP-kidney transplantation, LOS-length of stay, PHD-Premier Healthcare Database, USD-United States dollars.

Significance: *p* ≤ 0.05*; ***Wilcoxon Rank Sum tests*** were conducted to compare the medians for continuous variables (LOS and total costs).

Conclusions

- A significantly higher proportion of female recipients with ADPKD at index hospitalization for KTP surgery is likely an indicator of improved access to KTP among females with ADPKD.
- A significantly larger proportion of KTP recipients without ADPKD were of a racial minority compared to those with ADPKD at index hospitalization for KTP surgery. This may be an indicator of racial disparities in access to KTP among patients with ADPKD.
- KTP recipients with ADPKD impose less inpatient resource use and cost burden on hospitals compared to those without ADPKD. This is likely due to a lower comorbidity burden among recipients with ADPKD, resulting in a shorter post-surgical observation time and utilization of inpatient resources.

References

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