Urinary tract infections in kidney transplant recipients: Antimicrobial treatment choices are decreasing!

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Introduction

- Urinary tract infections (UTIs) represent a prevalent complication among kidney transplant recipients,
- Contributing significantly to both morbidity and mortality.
- The escalating resistance to antimicrobial agents, a phenomenon observed across various infectious contexts, poses substantial challenges in the effective management of UTIs.
- Understanding the local antimicrobial resistance landscape is imperative for guiding empirical treatment strategies at individual centers..

Method

- **A retrospective study**
- **January 2017 -December 2023 at Baskent University, Ankara Hospital**
- **Kidney transplant recipients, aged >18**
- **UTI-common causative pathogens,**
- **Antimicrobial resistance profiles against frequently used antibiotics,**
  - **-Colistin**
  - **-Amikacin,**
  - **-Ciprofloxacin,**
  - **-Trimethoprim/sulfamethoxazole,**
  - **-Meropenem**

- Rates of extended-spectrum beta-lactamase (ESBL) positivity,
- Multidrug resistance,
- Demographic and laboratory data were analyzed using SPSS 25 statistical software,

Results

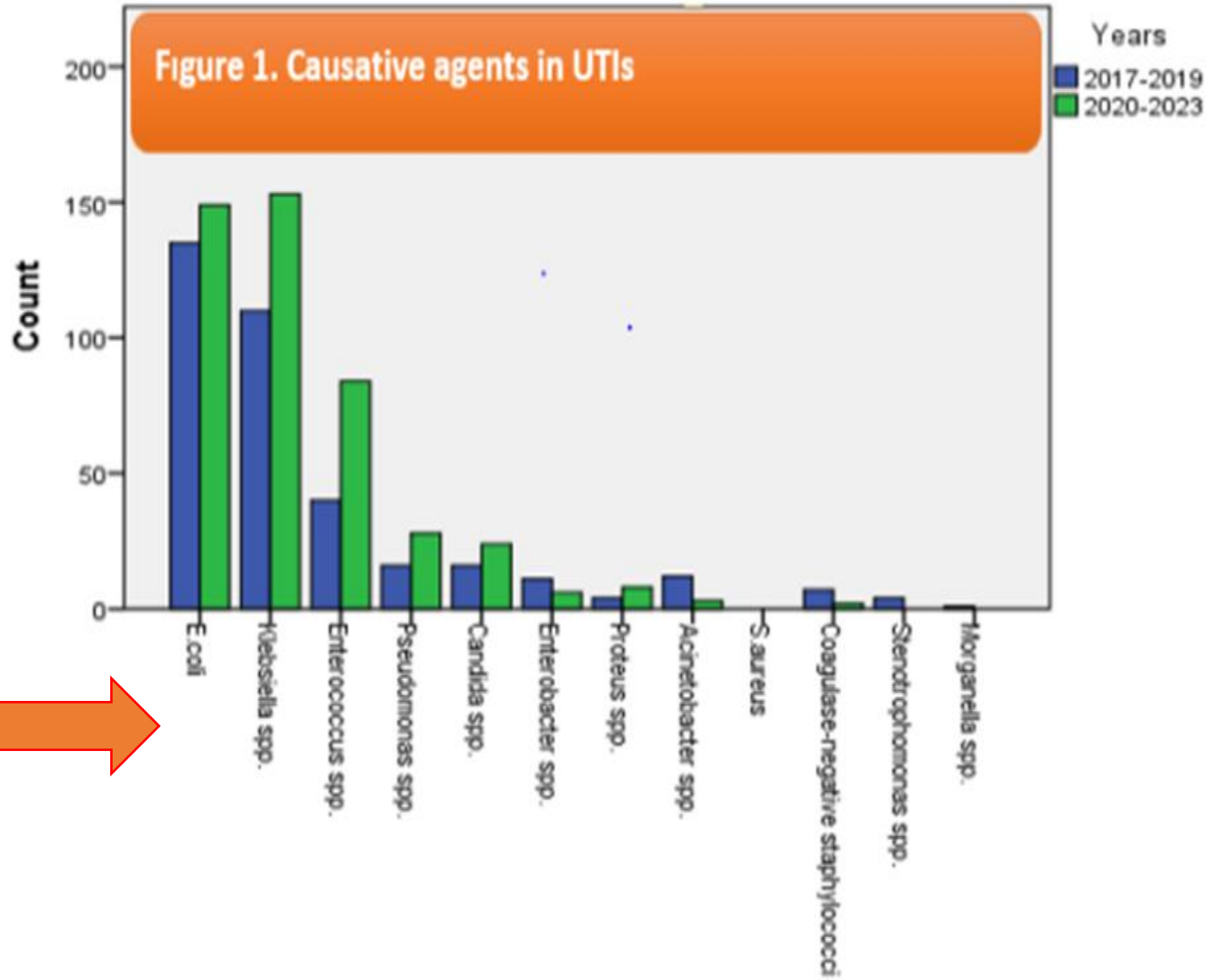
- During the seven-year study period (2017-2023),
- 441 kidney transplant recipients experienced a total of 813 UTIs episodes.
- 434 (53.3%) were female,
- Median age of 46±14.5 years (18-72).
- Causative pathogens included
  - 540 (66.4%) gram-negative bacteria,
  - 133 (16.3%) gram-positive bacteria,
  - 40 (4.9%) *Candida spp.*

- Blood cultures positivity was determined as 5.5%.
- The most frequently infectious agents were *Escherichia coli*, *Klebsiella pneumoniae*, *Enterococcus* spp., *Pseudomonas* spp., and *Candida spp*.
- ESBL positivity is determined by *E. coli* and *Klebsiella spp.* were found to be 45-52% and 56-67%, respectively.
- Pundrug resistance prevalence varied from 1% to 16%, exhibiting an upward trend over the study period.

- Resistance rates to ciprofloxacin and trimethoprim/sulfamethoxazole exceeded 70%,
- Resistance to carbapenems, colistin and amikacin increased to around 30%, with increasing trends observed over time.

Table 1. Data on 813 urinary tract infection episodes in kidney transplant recipients

	2017-2019 years, n=355 (%)		2020-2023 years, n=457 (%)	
Gender				
Female	184 (51.7)		250 (54.7)	
Male	172 (48.3)		207 (45.3)	
Median age ± SD (minimum-maximum)	45.7±14.7 (18-68)		42.9±14.3 (18-72)	
Causative agent in UTIs				
Gram negative	293 (82.3)		347 (75.9)	
Gram positive	47 (13.2)		86 (18.8)	
Candida spp.	16 (4.5)		24 (5.3)	
Growth in blood culture	37 (10.4)		18 (3.9)	
Resistance	*E. coli* n=135 (%)	*Klebsiella spp.* n=100 (%)	*E.coli* n=152 (%)	*Klebsiella spp* n=152 (%)
Extended-spectrum beta-lactamase (ESBL)	73(45.9)	62 (56.4)	80 (52.6)	92 (67.1)
Pundrug-resistance (PDR)	-	6 (5.5)	1 (0.7)	25 (16.4)
Colistin resistance	1 (0.7)	9 (8.2)	1 (0.7)	25 (16.4)
Amikacin resistance	4 (3)	13 (11.8)	2 (1.3)	28 (18.4)
Ciprofloxacin resistance	83 (61.5)	74 (67.3)	83 (54.6)	82 (53.9)
Carbapenem resistance	1 (0.7)	15 (13.6)	16 (10.5)	32 (21.1)
Trimethoprim/sulfamethoxazole resistance	82 (60.7)	85 (77.3)	102 (67.1)	88 (57.9)



Conclusion

- Enteric bacteria, particularly *E. coli*, *K. pneumoniae*, and *Enterococcus s*pp., predominate in UTIs among kidney transplant recipients.

- Our findings highlight a concerning surge in resistance to ciprofloxacin and trimethoprim/sulfamethoxazole, potentially limiting their utility in empirical treatment and prophylaxis.

- Moreover, escalating rates of ESBL and multidrug resistance underscore the imperative of targeted treatment guided by urine culture results in symptomatic patients.