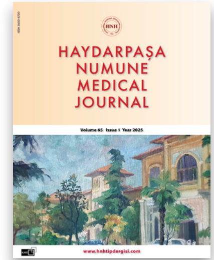
HAYDARPAŞA NUMUNE MEDICAL JOURNAL

DOI: 10.14744/hnhj.2026.66809
Haydarpasa Numune Med J 2026;66(1):97–105



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ORIGINAL ARTICLE

Community-acquired Complicated Urinary Tract Infections Caused by *Escherichia coli*: A Four-Year Retrospective Study in a Tertiary Care Hospital

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Abstract

Introduction: Urinary tract infections (UTIs) represent one of the most frequent infection-related reasons for outpatient encounters globally and are predominantly community-acquired, with *Escherichia coli* (*E. coli*) constituting the principal etiologic agent. Rising antimicrobial resistance in *E. coli* and the increasing frequency of complicated UTIs pose significant therapeutic challenges. This study aimed to determine the antimicrobial resistance profiles of *E. coli* isolates causing community-acquired UTIs in outpatients and to identify risk factors associated with the development of complicated UTIs.

Methods: This retrospective study included adult patients who presented to a tertiary care hospital over a four-year period (between January 1, 2021, and December 31, 2024) with community-acquired UTIs caused by *E. coli*. Demographic characteristics, clinical features, comorbidities, microbiological data, and antimicrobial susceptibility results were reviewed. Antimicrobial resistance rates were calculated, and factors associated with complicated UTI were evaluated using univariate and multivariate logistic regression analyses.

Results: A total of 414 patients were included, with a mean age of 49.7±18.3 years; 79.2% were female. The highest resistance rates of *E. coli* isolates were observed against ampicillin (51.9%), cefuroxime (37.7%), cefuroxime axetil (37.4%), and ciprofloxacin (33.6%). In multivariate logistic regression analysis, urolithiasis (Odds Ratio [OR]=2.67, 95% Confidence Interval [CI]=1.38–5.16, p=0.004) and the presence of a urinary catheter (OR=5.34, 95% CI=1.44–19.87, p=0.013) were identified as independent predictors of complicated UTI.

Discussion and Conclusion: High antimicrobial resistance rates emphasize the need for careful antimicrobial stewardship in community-acquired complicated UTIs. Our findings suggest that empirical use of fluoroquinolones may be inappropriate in this setting and that commonly preferred cephalosporins and ciprofloxacin should be used with caution. In addition, targeted evaluation and management of urolithiasis and routine reassessment of urinary catheter necessity may help reduce the burden of complicated UTIs.

Keywords: Antibiotic resistance; *Escherichia coli*; urinary catheter; urinary tract infections; urolithiasis.

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Submitted Date: 02.12.2025 **Revised Date:** 13.01.2026 **Accepted Date:** 27.02.2026

Haydarpaşa Numune Medical Journal

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Urinary tract infections (UTIs) are among the most common infectious diseases worldwide, affecting approximately 150 million people each year.[1] Globally, about 15% of all antibiotic prescriptions are issued for UTIs. These infections not only lead to increased morbidity and mortality but also impose a substantial economic burden on healthcare systems.[2] UTIs may be community-acquired or healthcare-associated; however, the majority present as community-acquired infections.[3]

The definition of UTIs varies across numerous studies and clinical guidelines, making comparisons between investigations challenging. In addition, there is significant terminological inconsistency regarding the criteria used to define complicated UTIs.[4] The 2025 Infectious Diseases Society of America (IDSA) guideline introduced several updates regarding the definition of complicated UTIs, restructuring the classification based on whether the infection is confined to the bladder.[5] Risk factors for complicated UTI include the presence of indwelling urinary catheters, nephrolithiasis, neurogenic or dysfunctional bladder, prior urological procedures, recent antibiotic exposure, immunosuppressive conditions, renal transplantation, and pregnancy. Accurate classification of complicated UTIs is critical, as it directly guides antibiotic selection, treatment route, and treatment duration.[6]

Other important factors influencing treatment decisions for community-acquired UTIs include knowledge of the possible causative pathogens and local antibiotic resistance patterns. *Escherichia coli* is the most common causative agent of community-acquired UTIs, with a prevalence ranging from 70% to 90% according to a systematic review.[7] Numerous studies have evaluated antimicrobial resistance rates in *E. coli*-associated UTIs. In a multicenter study involving 37 centers from all geographic regions of Türkiye, significant regional variations in antibiotic resistance rates were observed in community-acquired UTIs.[8]

The primary objective of this study is to evaluate antimicrobial resistance patterns and temporal trends of *E. coli* in community-acquired UTIs at a tertiary care hospital in Istanbul (2021–2024). The secondary objective is to compare resistance rates and associated risk factors between complicated and uncomplicated infections according to current IDSA guidelines, thereby providing updated real-world data from a single-center setting in Türkiye.

Materials and Methods

Study Design

This retrospective study was conducted at Sancaktepe Şehit Prof. Dr. İlhan Varank Training and Research Hospital, a tertiary hospital with high patient capacity that serves a large local population. The study included data from patients who presented to the outpatient clinic between January 1, 2021, and December 31, 2024. This study was conducted in accordance with the principles of the Declaration of Helsinki.

Inclusion Criteria

- Patients older than 18 years of age,
- Patients presenting to the outpatient clinic with a diagnosis of community-acquired UTI,
- Presence of at least one symptom related to UTI (dysuria, pollakiuria, urgency, pelvic or back pain, cloudy or malodorous urine, fever) and growth of *E. coli* at $\geq 10^5$ colony-forming units (CFU)/mL in urine culture.

Exclusion Criteria

- Patients younger than 18 years of age,
- Healthcare-associated UTI patients (patients with urine culture growth obtained 48 hours or later after hospital admission, or patients who underwent urological catheterization or procedures within the previous three months),
- Presence of *E. coli* growth in combination with other microorganisms in the urine culture,
- Patients whose records could not be accessed for the required data.

Definitions

Recurrent UTI: Patients diagnosed with at least two UTIs within six months or at least three UTIs within one year.[9]

Complicated UTI: UTIs occurring beyond the bladder in men or women (e.g., UTIs associated with fever or bacteremia, pyelonephritis [diagnosed by an infectious diseases and clinical microbiology specialist based on fever, flank pain, and radiologic signs of inflammation], prostatitis, or catheter-related UTIs).[5,10]

Community-acquired UTI: Community-acquired UTI was defined as infection in patients presenting to the outpatient clinic with at least one UTI-related symptom (dysuria, pollakiuria, urgency, pelvic or back pain, cloudy or malodorous urine, or fever) and a urine culture yielding $\geq 10^5$ CFU/mL, in the absence of urine culture growth obtained 48 hours or later after hospital admission.

Multidrug resistance (MDR): Resistance of a microorganism to at least one agent in three or more antibiotic classes.[11]

Microbiology

Midstream urine samples were collected after perineal and urethral hygiene education. A 0.01 µL loop was used to inoculate 5% sheep blood agar and MacConkey agar in the microbiology laboratory. Samples with growth $>10^4$ CFU/mL after 24–36 hours of incubation at 35–37°C were processed for identification and antimicrobial susceptibility testing. *E. coli* identification was performed using the MALDI-TOF MS system (Bruker Daltonics, Bremen, Germany), and antibiotic susceptibility testing was conducted using the automated VITEK 2 Compact system (bioMérieux, Marcy l'Étoile, France). Interpretation of results was based on the current European Committee on Antimicrobial Susceptibility Testing (EUCAST) criteria.

Data collection

For patients meeting the inclusion criteria, demographic characteristics (age, sex), presence of complicated UTI, history of recurrent infection, outpatient complaints, history of hospital admission or antibiotic use within the past three months, risk factors for UTI, and *E. coli* antibiotic resistance data were retrospectively collected and recorded in digital forms.

Statistical Analysis

The collected data were analyzed using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY, USA). Categorical variables were expressed as counts and percentages, while continuous variables were presented as mean±standard deviation. The Chi-square test and Fisher's exact test were used for categorical variables, and the Student's t-test was used for continuous variables. The complicated nature of UTI was considered the dependent variable. Variables showing significant associations in univariate analyses were included in multivariate logistic regression analysis. A *p*-value<0.05 was considered statistically significant.

Results

A total of 414 patients diagnosed with community-acquired *E. coli* UTIs between January 2021 and December 2024 were included in the study. The mean age of the patients was 49.7±18.3 years (range: 18–92), and 328 (79.2%) were female. In univariate analysis, advanced age (*p*=0.004) and male sex (*p*<0.001) were significantly associated with higher rates of complicated UTI (Table 1).

Table 1. Distribution of demographic characteristics and risk factors according to complicated status in community-acquired urinary tract infections (UTI) caused by *Escherichia coli*

Variables	All patients (n=414)	Uncomplicated (n=338)	Complicated (n=76)	*p*
	Mean ±SD (min-max) or n (%)	Mean±SD or n (%)	Mean±SD or n (%)	
Age	49.7±18.3 (18-92)	48.47±18.2	55.1±18.3	**0.004**
Gender (male)	86 (20.8)	57 (16.9)	29 (38.2)	**<0.001**
Gender (female)	328 (79.2)	281(83.1)	47 (61.8)	
Recurrent UTI	191 (46.1)	146 (43.2)	45 (59.2)	**0.011**
Hospitalization (last three months)	32 (7.7)	21 (6.2)	11 (14.5)	**0.015**
Antibiotic use (last three months)	155 (37.4)	114 (33.7)	41 (53.9)	**0.001**
Diabetes mellitus	59 (14.3)	48 (14.2)	11 (14.5)	0.951
Malignancy	12 (2.9)	11 (3.3)	1 (1.3)	0.703
Urolithiasis	57 (13.8)	36 (10.7)	21 (27.6)	**<0.001**
Neurogenic bladder	24 (5.8)	19 (5.6)	5 (6.6)	0.786
Previous urinary catheterization (last three months)	8 (1.9)	5 (1.5)	3 (3.9)	0.166
Presence urinary catheter	12 (2.9)	4 (1.2)	8 (10.5)	**<0.001**
Pregnancy	9 (2.2)	6 (1.8)	3 (3.9)	0.218
Chronic renal disease	18 (4.3)	14 (4.1)	4 (5.3)	0.754
Immunosuppression	9 (2.2)	8 (2.4)	1 (1.3)	1.000
Previous urological intervention	14 (3.4)	9 (2.7)	5 (6.6)	0.149
Benign prostatic hyperplasia	36 (8.7)	22 (6.5)	14 (18.4)	**0.002**
Previous gynecologic intervention	18 (4.3)	16 (4.7)	2 (2.6)	0.547

SD: Standard deviation, UTI: Urinary tract infection

Table 2. Presenting symptoms in community-acquired urinary tract infections (UTI) caused by *Escherichia coli* and results of univariate analysis between complicated and uncomplicated UTIs

Variables	All patients (n=414) n (%)	Uncomplicated (n=338) n (%)	Complicated (n=76) n (%)	p
Fever	27 (6.5)	0 (0)	27 (35.5)	**<0.001**
Pelvic or back pain	138 (33.3)	90 (26.6)	48 (63.2)	**<0.001**
Dysuria	305 (73.7)	260 (76.9)	45 (59.2)	**0.002**
Urgency	41 (9.9)	36 (10.7)	5 (6.6)	0.283
Increased frequency	103 (24.9)	80 (23.7)	23 (30.3)	0.230
Nausea-vomiting	13 (3.1)	6 (1.8)	7 (9.2)	**0.004**
Foul-smelling urine	31 (7.5)	28 (8.3)	3 (3.9)	0.194
Cloudy urine	11 (2.7)	8 (2.4)	3 (3.9)	0.432

Among the patients' presenting complaints, dysuria was the most common, reported in 305 patients (73.7%). Pain (back and pelvic) was the second most common complaint in 138 patients (33.3%), followed by urinary frequency in 103 patients (24.9%). In univariate analysis, complicated UTI patients more frequently reported fever, pain, and nausea-vomiting ($p<0.001$, $p<0.001$, and $p=0.004$, respectively). Conversely, dysuria was more frequently reported in patients with uncomplicated UTI ($p=0.002$). The distribution of presenting complaints and the results of univariate analysis between complicated and uncomplicated cases are shown in Table 2.

A history of hospital admission and antibiotic use within the past three months was more common among patients with complicated UTIs ($p=0.015$ and $p=0.001$, respectively). Additionally, recurrent UTI history was more frequent in complicated cases ($p=0.011$). Diabetes mellitus (DM) was the most common comorbidity, observed in 59 patients (14.3%), with no significant difference between the two groups in univariate analysis ($p=0.951$). Other factors significantly associated with complicated UTIs in univariate analysis included urolithiasis, urinary catheter presence, and benign prostatic hyperplasia (BPH) ($p<0.001$, $p<0.001$, and $p=0.002$, respectively). The univariate analysis results for demographic variables, risk factors, and complicated vs. uncomplicated UTI groups are presented in Table 1. Multivariate logistic regression analysis including variables significant in univariate analysis revealed that urolithiasis (Odds Ratio [OR]=2.67, 95% Confidence Interval [CI]=1.38–5.16, $p=0.004$) and urinary catheter presence (OR=5.34, 95% CI=1.44–19.87, $p=0.013$) were independently associated with complicated UTI (Table 3).

Antibiotic resistance rates of *E. coli* isolates from urine cultures were determined. The highest resistance rates were observed for ampicillin (n=215, 51.9%), cefuroxime (n=156, 37.7%), cefuroxime axetil (n=155, 37.4%), and ciprofloxacin (n=139, 33.6%). No resistance was detected against meropenem or imipenem. Antibiotic resistance rates and the univariate analysis of differences between complicated and uncomplicated UTIs are presented in Table 4. When antibiotic resistance rates were stratified by year between 2021 and 2024, higher resistance rates were observed in several commonly used antibiotics across the study period. The annual number and percentage of resistant isolates for each antibiotic are presented in Table 5. Year-specific resistance rates for each antibiotic are shown in Figure 1 to allow visual assessment of antibiotic resistance patterns over the study period.

Table 3. Multivariate logistic regression analysis results of factors associated with complicated urinary tract infection (UTI)

	OR (95% CI)	p
Age (years)	1.02 (0.99–1.06)	0.084
Male gender	1.74 (0.82–3.69)	0.147
Urolithiasis	2.67 (1.38-5.16)	**0.004**
Presence urinary catheter	5.34 (1.44-19.87)	**0.013**
Benign prostatic hyperplasia	1.41 (0.52-3.80)	0.493
Antibiotic use	0.84 (0.42-1.67)	0.618
Hospitalization	1.72 (0.89-3.35)	0.109
Recurrent UTI	1.33 (0.61–2.88)	0.472

OR: Odds Ratio; CI: Confidence Interval; UTI: Urinary Tract Infections.

Discussion

In this study, 414 patients diagnosed with community-acquired *E. coli* UTIs at a tertiary care hospital over the past four years were evaluated, and risk factors associated with complicated UTI development as well as antibiotic resistance patterns were investigated. Multivariate logistic regression analysis identified urolithiasis and urinary catheter presence as independent risk factors for the development

Table 4. Antibiotic resistance rates in community-acquired urinary tract infections caused by *Escherichia coli*

Variables	All patients (n=414) n (%)	Uncomplicated (n=338) n (%)	Complicated (n=76) n (%)	*p*
Amikacin	14 (3.4)	12 (3.6)	2 (2.6)	1.000
Amoxicillin / Clavulanic acid	114 (27.5)	87 (25.7)	27 (35.5)	0.084
Ampicillin	215 (51.9)	165 (48.8)	50 (65.8)	**0.007**
Ertapenem	2 (0.5)	2 (0.6)	0 (0.0)	1.000
Gentamicin	39 (9.4)	24 (7.1)	15 (19.7)	**0.001**
Levofloxacin	45 (10.9)	30 (8.9)	15 (19.7)	**0.006**
Nitrofurantoin	7 (1.7)	6 (1.8)	1 (1.3)	1.000
Piperacillin / Tazobactam	36 (8.7)	29 (8.6)	7 (9.2)	0.860
Cefepime	60 (14.5)	44 (13.0)	16 (21.1)	0.072
Cefixime	132 (31.9)	99 (29.3)	33 (43.4)	**0.017**
Cefoxitin	26 (6.3)	22 (6.5)	4 (5.3)	1.000
Ceftazidime	114 (27.5)	82 (24.3)	32 (42.1)	**0.002**
Ceftriaxone	126 (30.4)	88 (26.0)	38 (50.0)	**<0.001**
Cefuroxime	156 (37.7)	116 (34.3)	40 (52.6)	**0.003**
Cefuroxime axetil	155 (37.4)	115 (34.0)	40 (52.6)	**0.002**
Ciprofloxacin	139 (33.6)	100 (29.6)	39 (51.3)	**<0.001**
Trimethoprim / Sulfamethoxazole	127 (30.7)	96 (28.4)	31 (40.8)	**0.034**
MDR	132 (31.9)	95 (28.1)	37 (48.7)	**0.001**

MDR: Multidrug resistance

Table 5. Annual antibiotic resistance rates of *Escherichia coli* isolates causing community-acquired urinary tract infections (2021–2024)

Variables	2021 (n=81) n (%)	2022 (n=123) n (%)	2023 (n=109) n (%)	2024 (n=101) n (%)
Amikacin	3 (3.7)	1 (0.8)	5 (4.6)	5 (4.9)
Amoxicillin / Clavulanic acid	21 (25.9)	29 (23.6)	33 (30.3)	31 (30.7)
Ampicillin	34 (42.0)	61 (49.6)	61 (56.0)	59 (58.4)
Ertapenem	0 (0.0)	0 (0.0)	2 (1.8)	0 (0.0)
Gentamicin	4 (4.9)	10 (8.1)	13 (11.9)	12 (11.9)
Levofloxacin	0 (0.0)	15 (12.2)	18 (16.5)	12 (11.9)
Nitrofurantoin	0 (0.0)	2 (1.6)	3 (2.7)	2 (2.0)
Piperacillin / Tazobactam	7 (8.6)	10 (8.1)	10 (9.2)	9 (8.9)
Cefepime	0 (0.0)	12 (9.8)	24 (22.0)	24 (23.8)
Cefixime	24 (29.6)	28 (22.8)	42 (38.5)	38 (37.6)
Cefoxitin	4 (4.9)	4 (3.2)	10 (9.2)	8 (7.9)
Ceftazidime	21 (25.9)	23 (18.7)	36 (33.0)	34 (33.7)
Ceftriaxone	21 (25.9)	33 (26.8)	37 (33.9)	35 (34.6)
Cefuroxime	26 (32.1)	41 (33.3)	46 (42.2)	43 (42.6)
Cefuroxime Axetil	26 (32.1)	41 (33.3)	46 (42.2)	42 (41.6)
Ciprofloxacin	24 (29.6)	39 (31.7)	39 (35.8)	37 (36.6)
Trimethoprim / Sulfamethoxazole	23 (28.4)	38 (30.9)	37 (33.9)	29 (28.7)
MDR	19 (23.5)	36 (29.3)	36 (33.0)	41 (40.6)

MDR: Multidrug resistance

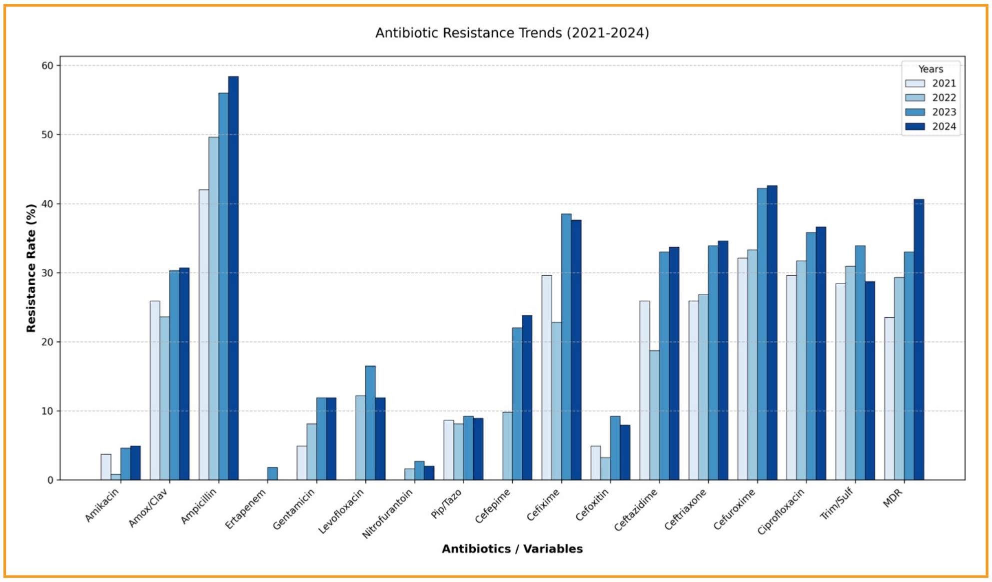

Figure 1. Distribution of antibiotic resistance rates by year in Escherichia coli–associated community-acquired urinary tract infections (2021–2024).

Amox/Clav: Amoxicillin / Clavulanic Acid, Pip/Tazo: Piperacillin / Tazobactam, Trim/Sulf: Trimethoprim / Sulfamethoxazole, MDR: Multidrug resistance

of complicated UTIs. The highest resistance rates of *E. coli* were observed against ampicillin, cefuroxime, cefuroxime axetil, and ciprofloxacin.

Univariate analysis also revealed significant differences between the two groups. Advanced age and male sex were significantly more common in patients with complicated UTIs. Aging is known to contribute to more severe UTIs due to immune system deficiencies, anatomical changes, and an increased burden of comorbidities.[12] Babich et al.[13] reported that advanced age in patients with complicated UTIs increased the likelihood of hospitalization. Previously, UTIs seen in men were often considered as having a high risk of complications or as complicated.[14,15] However, recent international guidelines, including those from the European Association of Urology (EAU) and IDSA, have revised these classifications. These guidelines do not consider sex alone as a criterion for complicated UTI and adopt a risk factor– and localization–based approach.[5,16] Although male gender was found to be a significant predictor of complicated UTI in our study, only 29 of 86 male patients (33.7%) were classified as having complicated UTI. Moreover, the lack of an independent association in the multivariate analysis further supports current guideline recommendations, indicating that male sex may act as a surrogate marker for accompanying risk factors rather than an independent determinant of complicated UTI. This is an important finding, suggesting that male gender alone should not be considered a criterion for complicated UTI.

Regarding symptoms, dysuria was the most frequently observed symptom. Fever, pain, and nausea-vomiting were more common in complicated UTIs, whereas dysuria was more frequently reported in uncomplicated UTIs. Considering the localization-based classification of the two groups, this finding is expected. Infections beyond the bladder are more likely to present with upper urinary tract symptoms and systemic manifestations.[5,17] Dysuria, being a common local symptom in cystitis, was thus more frequently observed in the uncomplicated UTI group. François et al.[18] reported dysuria in 415 of 440 patients (94%) followed for cystitis, making it the most common symptom in their cohort as well.

In our study, patients with complicated UTIs had more frequent recent antibiotic use and hospital admissions within the past three months. Consequently, higher antimicrobial resistance rates were observed in complicated UTIs against commonly used antibiotics. Previous studies have shown that recent hospitalization and antibiotic exposure are important risk factors for healthcare-associated and resistant UTIs.[19,20] Although few studies have directly linked recent antibiotic or healthcare exposure with complicated UTIs, resistant UTIs are inherently more likely to be complicated due to treatment challenges and the potential for complications.[21] Recurrent UTI history was also more common among complicated cases in our study, likely reflecting structural or functional risk factors (e.g., stones, obstruction, BPH) that both predispose to recurrence and contribute to complications.[22] In our cohort, 47.4% of male patients had BPH, and univariate analysis indicated a higher prevalence of BPH in complicated UTIs. A systematic review including 36 studies reported that BPH, along with urolithiasis, is among the most common obstructive conditions predisposing to UTIs, demonstrating that urethral obstruction can experimentally lead to cystitis, pyelonephritis, and bacteremia.[23]

Risk factors significantly associated with complicated *E. coli* UTIs in univariate analysis were included in multivariate regression analysis, which revealed a strong association between urolithiasis and complicated UTIs (OR=2.67). Urinary stones can contribute to UTIs by causing mechanical obstruction and acting as reservoirs for bacteria.[24] Studies have also shown that urolithiasis increases UTI severity. In a study from Taiwan including 662 patients, urolithiasis was associated with significantly higher rates of septic shock, acute kidney injury, and bacteremia in UTI patients.[25] Another study reported urolithiasis as a risk factor for acute kidney injury even in patients without hydronephrosis.[26] In our multivariate regression analysis, urinary catheter presence also remained a strong independent risk factor (OR=5.34). Catheterization is a known risk factor for complicated UTIs, contributing to both biofilm formation and antibiotic resistance, and catheter-associated UTIs are more likely to be accompanied by bacteremia.[27,28]

A recently published systematic review and meta-analysis found that antimicrobial resistance in community-acquired UTIs was associated with increased hospital stay, cost, and mortality.[29] A 14-year retrospective study in Australia reported increasing antimicrobial resistance over time in *E. coli* strains causing UTIs, with the average rate of MDR in community-acquired UTIs at 5.3% across all years.[30] This MDR rate is much lower than the 31.9% observed in our study, which may be attributed to geographic differences in antimicrobial resistance.[8] Other studies investigating MDR rates have also found differences between countries. A study conducted in Iran found a 58.4% rate of MDR in diabetic patients with *E. coli*-associated UTIs, while a similar study in Pakistan found a 51.5% rate in community-acquired UTIs caused by *E. coli*.[31,32] Knowledge of local antimicrobial resistance rates in outpatient UTIs is crucial for guiding empirical therapy. Sahilu and Kano reported that the most frequently prescribed antibiotics for outpatients with UTIs were fluoroquinolones (66.1%), penicillins (20.3%), cephalosporins (7.3%), and sulfonamides (6.3%).[33] In our study, the highest resistance rates were observed against ampicillin, cefuroxime, cefuroxime axetil, and ciprofloxacin, with significantly higher resistance in the complicated UTI group. A study from Türkiye by Korkmazer et al.[34] reported a similar resistance ranking for community-acquired UTIs (ampicillin, cefuroxime, ceftriaxone). Antibiotics with resistance rates below 10% in both groups, not associated with increased resistance in complicated UTIs, included piperacillin-tazobactam, amikacin, nitrofurantoin, and carbapenems. Preventing resistance development to these antibiotics requires strict adherence to infection control measures and rational antibiotic use in clinical practice.

This study has several limitations. The retrospective design may have resulted in missing clinical data and potential selection bias. Despite covering a large patient population, the single-center design limits generalizability. Although the study focused on the most common causative agent (*E. coli*) in community-acquired UTIs, it may not represent other pathogens. Due to laboratory limitations, resistance to fosfomycin, which can be used against *E. coli*, could not be studied. Nevertheless, the large sample size, inclusion of detailed clinical data, performance of multivariate logistic regression analysis, study design according to the most current international guideline criteria, and presentation of up-to-date antimicrobial resistance data are strengths of this study.

Conclusion

In conclusion, community-acquired complicated UTIs caused by *E. coli* were associated with high antimicrobial resistance rates, particularly to ampicillin, cephalosporins, and fluoroquinolones. Urolithiasis and the presence of urinary catheters were identified as independent risk factors for complicated infection. These findings highlight the importance of addressing modifiable risk factors and updating empirical treatment strategies based on local resistance data.

Ethics Committee Approval: This study was approved by the Scientific Research Ethics Committee of Sancaktepe Şehit Prof. Dr. İlhan Varank Training and Research Hospital (Date: 30 April 2025; Decision No: 132).

Informed Consent: Due to the retrospective nature of this study, informed consent was not obtained.

Conflict of Interest: The authors declare that there is no conflict of interest.

Financial Disclosure: The author declared that this study has received no financial support.

Use of AI for Writing Assistance: None declared.

Authorship Contributions:

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Acknowledgment: We would like to thank İzzettin Toktaş for his contributions to the statistical analysis of the study.

Peer-review: Externally peer-reviewed.

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