

Duration of Antimicrobials in Infected Obstructed Nephrolithiasis

Northern Health

Kahn, J¹ Gyomber, D² Hewagama, S¹
¹Department of Infectious Diseases, Northern Health, Melbourne, Victoria
²Department of Urology, Northern Health, Melbourne, Victoria



RESEARCH WEEK
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Background

Infected kidney stones are a key risk factor for UTIs and sepsis. Retrospective data suggest extended antibiotics until stone removal may reduce recurrence and readmissions¹⁻³. This study retrospectively compares short versus prolonged courses for infection outcomes and resistance.

Methods

Study design



Retrospective study at Northern Hospital (2019–2023): Adults with infected, obstructed nephrolithiasis on imaging and clinical/microbiological evidence of infection.

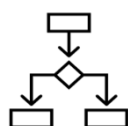
Groups



Short-course: antibiotics stopped before next procedure.

Suppressive: antibiotics continued until definitive stone management.

Outcomes



Primary: symptomatic UTI before next urological procedure.

Secondary: microbiological findings and infection-related outcomes.

Statistics



Conducted in Stata 18.0 using comparative tests and logistic regression ($p < 0.05$).

Results

Characteristic	Short course (n = 37)	Suppressive (n = 42)	p-value
Age, mean (SD)	55.8 (16.0)	61.8 (17.0)	0.113
Female, n (%)	21 (56.8%)	26 (61.9%)	0.642
Diagnosed inpatient, n (%)	36 (97.3%)	41 (97.6%)	1.000
Length of stay, mean days (SD)	3.4 (3.0)	6.4 (6.4)	<0.001
Stone location, n (%)			
Unilateral	21 (56.8%)	36 (85.7%)	0.004
Bilateral	16 (43.2%)	6 (14.3%)	
Obstruction present, n (%)	35 (94.6%)	39 (92.9%)	1.000
ICU admission, n (%)	12 (32.4%)	9 (21.4%)	0.269
Largest stone size, mm (SD)	9.3 (5.8)	9.6 (5.7)	0.477
Initial procedure, n (%)			
Stent insertion	30 (81.1%)	36 (85.7%)	0.752
Nephrostomy	6 (16.2%)	6 (14.3%)	
Stent exchange	1 (2.7%)	0	
Comorbidities, n (%)			
Diabetes mellitus	4 (10.8%)	16 (38.1%)	0.009
Smoker (current)	0	3 (7.1%)	0.243
Malignancy	1 (2.7%)	4 (9.5%)	0.364
Immunosuppression	0	1 (2.4%)	1.000
Hypertension	8 (21.6%)	16 (30.4%)	0.112
Cardiovascular disease	2 (6.4%)	3 (7.1%)	1.000
Dementia	1 (2.7%)	1 (2.4%)	1.000
CKD (eGFR < 60)	3 (8.1%)	5 (11.9%)	0.717
Dialysis	0	1 (2.4%)	1.000
Chronic lung disease	3 (8.1%)	4 (9.5%)	1.000
Mortality, n (%)	0 (0%)	0 (0%)	1.000
Antibiotic duration, median days (IQR)	7 (3–42)	20 (7–90)	<0.001
Time to first procedure, mean days (SD)	51.4 (46.7)	31.1 (22.6)	0.076

Figure 1

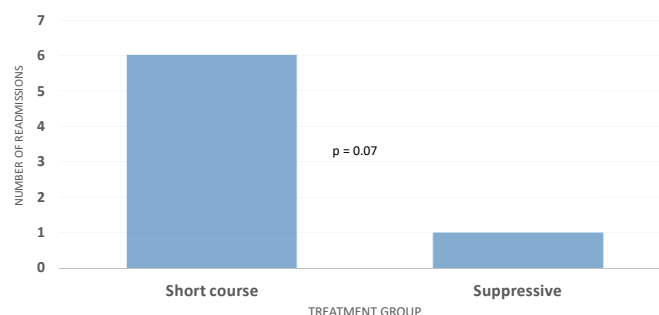


Figure 1: Readmission for infection in both groups

Figure 2

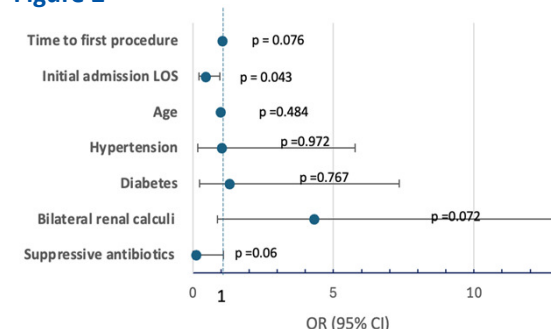


Figure 2: Univariate analysis of antibiotics and patient characteristics on risk of recurrent infection

Figure 3

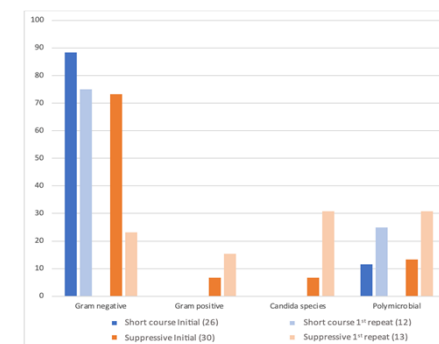


Figure 3: Microbiological analysis of patient samples

Conclusion

Suppressive antibiotics after decompression for infected obstructed nephrolithiasis were linked to fewer subsequent infections and readmissions than short courses, despite higher baseline risk, though not statistically significant and limited by study size. Larger prospective studies are needed to define optimal duration and balance infection prevention with antimicrobial stewardship.