

The effect of anal hygiene method in prevention from recurrent lower urinary tract infections in women

 Bilal Günaydın¹,  Sarp Korcan Keskin^{2,3}

¹Niğde Ömer Halisdemir University, Department of Urology, Niğde, Turkey

²Oxford University Hospitals, Department of Urology, United Kingdom

³Bahçeşehir University, Department of Urology, İstanbul, Turkey

Cite this article as: Günaydın B, Keskin SK. The effect of anal hygiene method in prevention from recurrent lower urinary tract infections in women. J Health Sci Med 2022; 5(6): 1568-1571.

ABSTRACT

Aim: To evaluate the effects stopping the use of water and hands on preventing urinary tract infections (UTI) for a group of female patients having recurrent UTIs (rUTI).

Material and Method: A retrospective observational study conducted in a tertiary care hospital between February 2017 and March 2018. 273 female patients which had rUTIs without any concomitant risk factors were included. In the study, 2 or more bacteriologically documented UTIs in the last 6 months were accepted as rUTI. The groups of the study defined as using their hands, using water only and using toilet paper (using either one of these two methods and then using toilet paper). Patients were observed for an average time of 10.4 months after stopping the use of water and hands for anal cleansing after defecation. Instead they were all given toilet education and started wiping for anal hygiene.

Results: There was a statistically significant relationship between previous history of UTI and washing with hands + water ($p=0.021$). The rate of previous UTIs were significantly higher in the group of patients using their hands for anal washing (69% vs 31%). No relation was found between previous UTI history variable for using toilet paper and flushing with water only ($p>0.05$). Our results showed a statistically significant decrease of UTIs after stopping the use of water and hands in the patient group who had a previous UTI history ($p=0.001$).

Conclusion: We managed to underline that washing with hands for anal cleansing as a risk factor for rUTIs in women. Also showed the positive effect of stopping the use of water and hands for anal cleansing after defecation for prevention from rUTIs. We encourage all clinicians for further studies to investigate this issue in the future.

Keywords: Recurrent urinary tract infections, anal cleansing, anal hygiene

INTRODUCTION

Recurrent lower urinary tract infections (rUTI) in women are a very common and troublesome condition around the world (1). Nearly 50% of all women will have at least one urinary tract infections (UTI) in their lifetime, with a recurrence rate about 25% (1,2). Hence the treatment and prevention is utmost significant for all clinicians. Although there are many predisposing factors, it is assumed that anal cleansing after defecation is an important one since the most common pathogens for UTIs are bowel flora bacteria with *Escherichia coli* (*E. coli*) being the most common among these (3).

The prevention from rUTIs in women has a wide range from surgical correction of underlying anatomical causes to the use of prophylactic antibiotics or other therapeutic agents. Behavioral treatments related to specific risk

factors such as hygiene before and after sexual intercourse or increasing fluid intake has been well established but there is a scarcity of data about the anal region hygiene methods (4-10).

There are several studies in the literature investigating the possible causes of rUTIs such as sexual hygiene, hand sanitation, fluid intake or BMI, but to the best of our knowledge there is no study focusing on the anal cleansing methods in rUTI patients (11). Anal cleansing method is highly variable for different cultures. We particularly focused on one method in this study: anal cleansing with water.

There is an estimate of over 1 billion people using water and hands in different ways for anal hygiene after defecation. In many cultures, especially in Muslim

and Hindu populations, water is usually used for anal cleansing using a jet, as with a bidet, or splashed and washed with the hand (12). In this study, we hypothesized that giving toilet hygiene education and also stopping the use of water and hands can be beneficial for a group of female patients having rUTIs. Findings from this study will highlight the etiological importance of anal hygiene method and outcomes associated this condition will influence future treatment guidelines and strategies in this particular group of patients.

MATERIAL AND METHOD

The study was carried out with the permission of Niğde Ömer Halisdemir University Hospital Noninvasive Clinical Researches Ethics Committee (Date:15.08.2022, Decision No:2022/90). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. This is an observational and retrospective study with an analytical component.

Hospital information system records were scanned between 01 January 2017 and 31 June 2018. All patients who had rUTIs and anal hygiene method between 01 January 2017 and 31 June 2018 were included. All participants agreed to participate in this study and signed an informed consent form. There is a variety of definitions for recurrent urinary tract infections (rUTI) in the current literature (13). In this particular study, 2 or more bacteriologically documented UTIs in the last 6 months were accepted as rUTI. The study group comprised of 273 women over the age of 18 who had rUTIs and no other known predisposing factors. All patient groups were using water for anal cleansing. All patients required urinalysis and urine culture in the last 6 months. Patients whose urine culture results could not be reached were excluded from the study. The toilet habits of the patients included in the study were questioned and recorded. Anal or anal-to-vaginal sexual intercourse was questioned as a predisposing factor and these patients were excluded from the study. Patients who received cystoscopy or urodynamic examination indications were excluded from the study, considering that the culture results may develop contamination or infection due to the procedures. The patients in the group 'using their hands' were touching their perianal region or splashing the water with their hands for cleansing. The patients in the group 'using water only' were not doing any additional cleansing or drying method after washing with water. The patients in the group 'using toilet paper' were using either one of these two methods and then using toilet paper. Patients with complicating factors such as urinary stone disease, pregnancy, anatomical abnormality of the urinary tract, neurologic conditions, diabetes, or currently taking immunosuppression were excluded from the study.

Statistical Analysis

The normal distribution of data was tested with the Shapiro-Wilk test. The numerical data were analyzed independently in two groups and Mann Whitney U test was used for those who did not show normal distribution. The relationships of two independent variables at the categorical level were tested with chi-square. In the two dependent groups, the relationship of the variables with each other was done by McNamer test and spearman correlation. The mean±standard deviation (Median) for numerical variables and the number and % values for categorical variables were given as descriptive statistics. IBM SPSS Windows 22.0 package program was used for statistical analysis and $p < 0.05$ was considered statistically significant.

RESULTS

The number of documented UTIs for all patients varied between 2 and 7 (2.50 ± 0.84) in the last 6 months and age 20 and age 94 (67.94 ± 13.13) as shown in **Table 1**.

	Min	Max	Mean
Number of documented UTIs in last 6 months	2.0	7.0	2.5±0.8
Age	20	94	67.94±13.13

As this study was conducted with a group of Turkish females, the use of hands with water for anal cleansing was high. The most frequent causing pathogen was *E. coli*. The frequencies of different categorical variables are listed in **Table 2**.

	Count	%
Using toilet paper		
No	175	64.1
Yes	98	35.9
Anal hygiene		
Flushing with water only	99	36.3
Washing with hands + water	174	63.7
Previous UTI history		
No	168	61.5
Yes	105	38.5
Urine culture		
<i>E. coli</i>	157	57.51
<i>Klebsiella</i>	27	9.89
<i>Pseudomonas</i>	25	9.16
Proteus	29	10.62
Staph	20	7.33
Other	15	5.49
UTI after stopping the use of water		
No	207	75.8
Yes	66	24.2

The relationship between the number of documented UTIs and the method of anal cleansing is summarized in **Table 3**. The use of toilet paper was not found to be a statistically significant variable for rUTIs ($p=0.729$). Similar results were observed for the groups of washing with hands + water and flushing with water only ($p>0.05$). p value was obtained from Mann Whitney U test.

	n	Mean±SD	Median	p
Using toilet paper				0.729
No	175	2.49±0.8	2	
Yes	98	2.51±0.91	2	
Anal hygiene				0.918
Flushing with water only	99	2.51±0.87	2	
Washing with hands+water	174	2.49±0.82	2	
Urine culture				0.787
<i>E. coli</i>	157	2.5±0.75	2	
<i>Klebsiella</i>	27	2.41±0.75	2	
<i>Pseudomonas</i>	25	2.44±0.96	2	
<i>Proteus</i>	29	2.48±1.09	2	
Staph	20	2.65±1.14	2	
Other	15	2.53±0.83	2	

There was a statistically significant relationship between previous history of UTI and washing with hands + water ($p=0.021$). The rate of previous UTIs were significantly higher in the group of patients using their hands for anal washing (69% vs 31%). No relation was found between previous UTI history variable for using toilet paper and flushing with water only ($p>0.05$). These data are shown in **Table 4**.

	Previous UTI history			
	Yes		No	
	n	%	n	%
Using toilet paper				
Yes	45	42.9	53	31.5
No	60	57.1	115	68.5
	p=0.058			
Anal hygiene				
Washing with hands + water	116	69.0	58	55.2
Flushing with water only	52	31.0	47	44.8
	p=0.021*			

There was a statistically significant decrease of UTIs after stopping the use of water in the patient group who had a previous UTI history ($p=0.001$; $r=-0.123$ $p=0.042$). **Table 5** shows this relationship.

	UTI after stopping the use of water		Total
	Yes	No	
Previous UTI history			
Yes			
n	17	88	105
% within	27.4%	41.7%	38.5%
No			
n	45	123	168
% within	72.6%	58.3%	61.5%
Total			
Count	62	211	273
% within	100.0%	100.0%	100.0%

DISCUSSION

For all the clinicians rUTIs in women are an increasing concern as this group of patients might cause unnecessary use of antibiotics and may lead to a higher prevalence of drug-resistant bacteria. Antibiotic resistance represents a major problem worldwide, mainly due to the lack of new drugs against carbapenemase-producing Enterobacteriaceae (14,15). Thus, prevention from rUTIs is a very important goal for both the patients with rUTIs and all population who are under the risk of facing an UTI in the future.

The preventative measures for rUTIs are well defined. Continuous antibiotic prophylaxis or postcoital prophylaxis, if there is close correlation with sexual intercourse, are most effective to prevent rUTIs. The European Association of Urology suggests behavioural modifications and non-antimicrobial measures as first line. Antimicrobial prophylaxis only after these methods have been attempted (16). In postmenopausal patients, vaginal use of oestriol can be effective (17,18). Oral or parenteral immunoprophylaxis can be tried for rUTI (19). Other choices of therapy are prophylaxis with cranberry products or some probiotics which lack solid scientific data (20).

On the other hand, there is a scarcity of data on the anal hygiene methods in the literature. To be more specific, to the best of our knowledge, there are no publications or guidelines concentrating on the different anal cleansing methods after defecation for the etiology of UTIs. This is specifically important for the clinicians working in countries which have Turkish, Muslim, Asian, European or Hindu populations. These populations may use water for anal cleansing with or without using their hands or toilet paper. As it is a widely accepted fact that most of the UTIs are caused by bowel flora bacteria, this way of contamination must be considered for those who have rUTIs.

Even we did not manage to show a direct relationship with using water for anal cleansing with rUTIs, our results suggested that the rate of previous UTIs were significantly more and the relapsing or recurring infections were

significantly less in the group of patients using their hands for anal cleansing. When the two statistically significant results combined, we reached a result suggesting that using hands with water for anal cleansing was a major risk factor for rUTIs and the behavioral modification to stop this habit improves the future risk of having UTIs.

Lack of randomization and the limited number of patients were the main limitations for our study. Furthermore, categorizing patients by only using water with their hands or toilet paper, can't be the only factor causing rUTIs. There also very important factors beyond our database such as the level of hand hygiene, cleanliness of the water used for washing, fluid intake habits or other predisposing factors such as post-coital infections and partner-related contaminations.

It is also supported by literature data that there is a serious relationship between recurrent urinary tract infections and bladder pain syndrome/interstitial cystitis. The effect of bladder pain syndrome/interstitial cystitis on quality of life and its relationship with urinary tract infections were also studied by Sarıkaya et al. (21). The study of Sarıkaya et al. and literature data also support our findings on urinary tract infections.

The limitation of our study is that the follow-up period of the patients was not very long and the European Society for the Study of Interstitial Cystitis (ESSIC) scores of the patients could not be performed. Quality of life questionnaires (O'Leary scale etc.) could not be applied because it is a retrospective study and because of the limitations in patients' ability to remember the past.

CONCLUSION

We managed to underline the positive effect of stopping the use of water and hands for anal cleaning after defecation for prevention from rUTIs. We encourage all clinicians for further studies to investigate this issue in the future.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Niğde Ömer Halisdemir University Hospital Noninvasive/ Clinical Researches Ethics Committee (Date: 15.08.2022, Decision No: 2022/90).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper and that they have approved the final version.

REFERENCES

1. Foxman B. Recurring urinary tract infection: incidence and risk factors. *Am J Public Health* 1990; 80: 331-3.
2. Albertsen PC. Risk factors for recurrent urinary tract infection in young women. *J Urol* 2003; 170: 698.
3. Aydin A, Ahmed K, Zaman I, Khan MS, Dasgupta P. Recurrent urinary tract infections in women. *Int Urogynecol J* 2015; 26: 795-804.
4. Nickel JC. Practical management of recurrent urinary tract infections in premenopausal women. *Rev Urol* 2005; 7: 11-7.
5. Kodner CM, Thomas Gupton EK. Recurrent urinary tract infections in women: diagnosis and management. *Am Fam Physician* 2010; 82: 638-43.
6. Hickling, DR, Nitti VW. Management of recurrent urinary tract infections in healthy adult women. *Rev Urol* 2013; 15: 41-8.
7. Gupta K., Trautner BW. Diagnosis and management of recurrent urinary tract infections in non-pregnant women. *BMJ* 2013; 346: f3140.
8. Gupta K, Stamm WE. Pathogenesis and management of recurrent urinary tract infections in women. *World J Urol* 1999; 17: 415-20.
9. Eells SJ, Bharadwa K, McKinnell JA, Miller LG. Recurrent urinary tract infections among women: comparative effectiveness of 5 prevention and management strategies using a Markov chain Monte Carlo model. *Clin Infect Dis* 2014; 58: 147-60.
10. Al-Badr A, Al-Shaikh G. Recurrent urinary tract infections management in women: a review. *Sultan Qaboos Univ Med* 2013; 13: 359-67.
11. Guglietta A. Recurrent urinary tract infections in women: risk factors, etiology, pathogenesis and prophylaxis. *Future Microbiol* 2017; 12: 239-46.
12. Winblad U, Simpson-Hebert M. *Ecological Sanitation - Revised and enlarged edition* 2004; 67
13. Malik RD, Wu YR, Zimmern PE. Definition of recurrent urinary tract infections in women: which one to adopt? *Female Pelvic Med Reconstr Surg* 2018; 24: 424-9.
14. Concia E, Bragantini D, Mazzaferri F. Clinical evaluation of guidelines and therapeutic approaches in multi drug-resistant urinary tract infections. *J Chemother* 2017; 29: 19-28.
15. Zowawi HM, Harris PN, Roberts MJ, et al. The emerging threat of multidrug-resistant Gram-negative bacteria in urology. *Nat Rev Urol* 2015; 12: 570-84.
16. Bonkat G, Bartoletti RF, Bruyère F, et al. *Wullt Guidelines Associates: EAU Guidelines on Urological Infections* 2017; 14.
17. Raz R, Gennesin Y, Wasser J, Stoler Z, Rosenfeld S, Rottensterich E, Stamm WE. Recurrent urinary tract infections in postmenopausal women. *Clin Infect Dis* 2000; 30: 152-6.
18. Raz R, Stamm WE. A controlled trial of intravaginal estriol in postmenopausal women with recurrent urinary tract infections. *N Engl J Med* 1993; 329: 753-6.
19. Naber KG, Cho YH, Matsumoto T, Schaeffer AJ. Immunoactive prophylaxis of recurrent urinary tract infections: a meta-analysis. *Int J Antimicrob Agents* 2009; 33: 111-9.
20. Wagenlehner FM, Vahlensieck W, Bauer HW, et al. Prevention of recurrent urinary tract infections. *Minerva Urol Nefrol* 2013; 65: 9-20.
21. Sarıkaya K, Senocak C, Ibis MA, Sadioglu FE, Ciftci M, Bozkurt OF. The effect of bladder pain syndrome/interstitial cystitis on partner sexual functions. *J Ist Faculty Med* 2022; 85: 110-6.