

## Effect of abluion the genital area on result of urine culturing among 3-12 years old girls referring to Amir Kabir hospital, Arak, Iran

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### ABSTRACT

**Background:** Urine tract infection (UTI) is the most prevalent bacterial infection and the second prevalent infection after viral flu among children. With respect to the importance of urine culturing, we decided to assess the effect of abluion the genital area on the result of urine culturing among 3-12 years old girls referring to Amir Kabir hospital, Arak, Iran.

**Patients and methods:** This randomized clinical trial was achieved on 620 girls referring to our hospital. Children were randomly assigned in two groups, with and without abluion. In abluion group, the appropriate technique of genital area abluion with water and soap was trained as well as how to collect middle-urine sampling, however, the other group received recommendations on how to appropriately collect middle-urine sample.

**Results:** Of 310 children of the abluion-trained group, UTI was reported in 11 (3.5%), contamination in 3 (1%) while 296 children were normal (95.3%). However, these figures were 14 (4.7%), 6 (2%) and 290 (93.3%) in the other group, respectively. Contamination rate did not differ significantly between the 2 groups ( $P=0.49$ ).

**Conclusion:** Genital area abluion is not associated with a significant decrease in rate of urine culture contamination, hence, it should not be routinely recommended for children.

**Keywords:** *Abluion of genital area, Contamination, Children, Urine tract infection.*  
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### INTRODUCTION

Urinary tract infection (UTI) is the most common genitourinary disease and the second infectious bacterial disease (after respiratory infections) in children, so that about 3-5% of school-aged girls are suffering from UTI. Prevalence of UTI during infancy period in boys are 2 times more than girls, but this ratio elevating in girls and after 2 years UTI sex ratio become 10 to 1 in girls to boys (1-5). Considering the

prevalence and complications created by frequent urinary tract infection, such as kidney scar, hypertension and renal failure, treatment and patient follow-up is essential (2,5).

Normally washing before urine sampling is recommended, especially in females. Some references have great emphasis on washing urine disposal place three consecutive times with soap and water (5), however, others demonstrated that abluion of genital area may be associated with contamination of vaginal discharge, resulting in culture false positive reports (6).

Although recent studies have postulated a non-significant association between urine culture results

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and washing the genital area, others have demonstrated that opening labia is the only recommended approach for urine sampling (7-11). Gaspari et al gathered urine samples with and without abluion and finally proposed that contamination in both groups did not differ significantly (8). Additionally, Garcia et al indicated that observing health-related orders before taking urine samples could decrease contamination risk (12). Most of prior investigators believed that washing genital area has no effect on culture results, thus, performing mid-stream urine sampling (MSU) without washing genital area will be appreciated by not only physicians but also patients.

Since prompt diagnosis and treatment of UTI is of utmost importance, appropriate techniques for urine sampling could improve culture results, hence, we surveyed the effect of washing genital area on urine culture results among a group of school-aged girls referring to Amir Kabir hospital, Arak, Iran.

## PATIENTS and METHODS

This randomized control trial was carried out on 620 school-aged girls (3-12 year-old) referring to Pediatric Clinic of Amir Kabir hospital, Arak, Iran. All were suspected to have UTI, for which they were requested to collect urine sample. The following inclusion criteria were applied at baseline: ability to control urination, no use of antibiotics in past 7 days, negative history of urine catheterization, parents' cooperation, and lack of anomaly or genital inflammation.

Children were randomly assigned in two groups. Both groups received initial training on how to collect mid-stream urine sample. Additionally, in the washing group, the appropriate technique of genital area abluion with water and soap from front to rear with opening labia was explained. Two days later children came back for urine sampling after which results of urine analysis

and culture were recorded in a check-list. Obviously, children who did not cooperate were excluded and replaced. Having initial data gathered, results were statistically analyzed using chi square and t-test, when appropriate, with SPSS software (version 11.5, SPSS Inc., USA).

## RESULTS

In this study, 620 girls aged 3-12 years were admitted to Pediatric Clinic of Amir Kabir hospital. They were randomly assigned in two groups. The mean age of subjects in the abluion-trained group was  $7.53 \pm 2.22$  as compared to  $7.60 \pm 2.19$  years of the other group (NS). Results of urine culture in both groups were studied and patients categorized into 3 groups: normal, UTI, and contaminated.

Of 310 children of the abluion-trained group, UTI was reported in 11 (3.5%), contamination in 3 (1%) while 296 children were normal (95.3%). However, these figures were 14 (4.7%), 6 (2%) and 290 (93.3%) in the other group, respectively. Contamination rate did not differ significantly between the 2 groups (1% in abluion-trained vs. 2% in the other group,  $P=0.49$ ).

## DISCUSSION

The present study was conducted with the aim of determining the effect of genital abluion on urine culture results in school-aged girls. Results revealed that genital abluion is not associated with a significant decrease in urine culture contamination rate.

Prior investigators have focused on the relationship between urine culture contamination and genital area abluion. This is based on the hypothetical mechanism that urethra is close to vagina in a way that when urine samples are obtained it will be in contact with genital discharges and therefore will be contaminated with bacteria which are normally colonized there resulting in false positive reports (3).

Holliday et al studied 192 women and declared that there was no difference in urine culture contamination between genital washing- and non-washing-group (11). Similarly, in separate studies conducted by Gaspair et al and Metha et al, contamination rate of urine samples collected after abluion of genital area were not significantly differed from the other group (8,13). Conversely, Garcia et al randomly assigned 515 women in two groups of case and control, concluded that washing genital area before obtaining middle sample urine will reduce the risk of contamination in urine samples (12). Surprisingly, Bekeris et al surveyed 14739 subjects admitted in 127 laboratories in US. They categorized samples in two groups, with and without genital abluion during urine sampling. Results showed that genital abluion can elevate the urine culture contamination (14). Miron also showed the importance of genital abluion in urine culture contamination in children (15).

In our setting, there was no significant association between genital abluion and urine culture contamination, hence, we do not recommend genital abluion before urine sampling in children. We would like to address the following points:

Iranian people are deliberately bound to follow sanitary instructions due to their culture, believes and religious opinions. In many different sources, the sanitary observance for increasing healthcare is also emphasized. In our religion, washing the sexual organs by water and soap is overemphasized than other societies. Using western-styled toilet and not using the water for washing genital organ, is the clear difference between Iranian culture and westerners'. Additionally, taking care of children in our country is of utmost importance. Children are closely connected to their family (parents, sometimes brothers and sisters, relatives) and child is always under the special observance of the family (personal and social sanitary and personal and social disciplines, self-confidence, etc). When children learn that observing personal sanitary is a

guarantee for their physical and metaphysical health, he/she will pay further attention to the related instructions. Therefore, ineffectiveness of genital washing in our setting could be in part explained by the abovementioned facts. While in other countries, children have no sentimental connections and are alone in the complicated industrial world, they are deprived of the necessary instructions.

In conclusion, our study revealed that genital washing is not associated with a significant decrease in urine contamination while mid-stream urine is sampled.

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