

Comparative Emergence of Community Acquired Urinary Tract Infection in Iranian Girl Children's During of 2009 and 2010 Year

SHILA JALALPOUR

Molecular Medicine Research Centre, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.
E-mail: shilla.jalalpoor@yahoo.com

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ABSTARCT

Urinary tract infection (UTI) is defined by the presence of a pure growth of more than 10^5 colony forming units of bacteria per milliliter of urine. In early childhood, *Enterobacteria* and *Enterococci* are part of the normal per urethral flora. *Escherichia coli* is the dominant gram-negative species in young girls, whereas *E. coli* and *Proteus* species predominate in boys. In infants and young children, UTIs may be harder to detect because symptoms are less specific. In fact, fever is sometimes the only sign. Subject of this search was comparative frequency of community acquired urinary tract in Iranian girl children's during of 2009 and 2010 year. Materials and Methods Urine cultures were routinely obtained on children younger than 10 years of age. Standard quantitative culture was performed by laboratory technologists. Results According to result of 2009 year, from 325 urine sample, frequency of urinary trace infection in girl children was 5.1% and according to result of 2010 year, from 702 urine sample, frequency of urinary trace infection in girl children was 5.3%. Conclusion UTI are a serious health problem affecting millions of people each year. Infections of the UTI are the second most common type of infection in the body. Some things that may help prevent UTIs in child include of: avoid giving your child bubble baths, dress your child in loose-fitting clothing and in girl, teach her to wipe from front to back after she uses the bathroom so that germs from the rectum aren't wiped into the vagina.

Key Words: Bacteriuria, Girl Children, *Escherichia coli*, Symptoms.

INTRODUCTION

Urinary tract infections (UTIs) are a common type of infection caused by bacteria that travel up the urethra to the bladder. A bladder infection is called cystitis. If bacterial infection spreads to the kidneys and ureters, the condition is called pyelonephritis (Conway *et al.*, 2007, Foster., 2008, Justice *et al.*, 2006, Nicolle., 2008, U.S. 2008). Cystitis is considered a lower urinary tract infection. Pyelonephritis is an upper urinary tract infection and is much more serious. UTI is defined by the presence of a pure growth of more than 10^5 colony forming units of bacteria per milliliter of urine. Lower counts of bacteria may be clinically important, especially in boys, and in specimens obtained by

urinary catheter. Any growth of typical urinary pathogens is considered clinically important if obtained by suprapubic aspiration. In practice, three age ranges are usually considered on the basis of differential risk and different approaches to management: children under 1 year; young children (1–4, 5, or 7 years, depending on the information source); and older children (up to 12–16 years). Recurrent UTI is defined as a further infection by a new organism (Conway *et al.*, 2007, Foster., 2008, Justice *et al.*, 2006, Nicolle., 2008, U.S. 2008). Relapsing UTI is defined as a further infection with the same organism. Boys are more susceptible to UTI than girls before the age of 6 months; thereafter, the incidence is substantially higher in girls than in boys (Jakobsson *et al.*, 1999). Estimates of the true

incidence of UTI depend on rates of diagnosis and investigation (Jadresic *et al.*,1993.Jakobsson *et al.*,1999). The normal urinary tract is sterile. Contamination by bowel flora may result in urinary infection if a virulent organism is involved, or if the child is immunosuppressed. In neonates, infection may originate from other sources. *Escherichia coli* accounts for about 75% of all pathogens, *Proteus* more common in boys (one study found that proteus caused 33% of UTI infections in boys aged 1–16 years, compared with 0% of UTI infections in girls aged 1–16 years). Obstructive anomalies are found in up to 4%, and vesicoureteric reflux in 8% to 40% of children being investigated for their first UTI (Dick *et al.*,1996). One meta-analysis of 12 cohort studies (537 children admitted to hospital for UTI, 1062 kidneys) found that 36% of all kidneys had parenchymal defects on dimercaptosuccinic acid (DMSA) scintigraphy and that 59% of children with vesicoureteric reflux on micturatingcystourethrography had at least one scarred kidney (pooled positive likelihood ratio 1.96, 95% CI 1.51 to 2.54; pooled negative likelihood ratio 0.71, 95% CI 0.58 to 0.85) (Wennerstrom *et al.*,2000). There was evidence of heterogeneity in likelihood ratios among studies. The authors concluded that vesicoureteric reflux is a weak predictor of renal damage in children admitted to hospital (Gordon *et al.*,2003). Thus, although vesicoureteric reflux is a major risk factor for adverse outcome, other factors, some of which have not yet been identified, are also important. Women are more prone to urinary tract infections than men, and these infections tend to recur. One reason is that the urethra (the tube that carries urine away from the bladder) is shorter in women than in men. Contraceptive spermicides and diaphragm use are other risk factors. When women reach menopause, the loss of estrogen thins the lining of the urinary tract, which increases susceptibility to bacterial infections. Pregnancy does not increase the risk of getting a urinary tract infection but it can increase the risk of developing a serious infection that could potentially endanger the mother and fetus (Foster.,2008, Perrotta *et al.*,2008). Symptoms of a UTI range from slight burning with urination or unusual-smelling urine to severe pain and high fever. A child with a UTI may also have no symptoms. A UTI causes irritation of the lining of the bladder, urethra, ureters, and kidneys, just as the inside of

the nose or the throat becomes irritated with a cold. In infants or children who are only a few years old, the signs of a UTI may not be clear because children that young cannot express exactly how they feel. Children may have a high fever, be irritable, or not eat. On the other hand, children may have only a low-grade fever; experience nausea, vomiting, and diarrhea; or just not seem healthy (Lin .,2008,Schroeder *et al.*,2005,Shaikh *et al.*,2007,McGillivray *et al.*,2005,Mori *et al.*,2007). Children who have a high fever and appear sick for more than a day without signs of a runny nose or other obvious cause for discomfort should be checked for a UTI. Older children with UTIs may complain of pain in the middle and lower abdomen. Crying or complaining that it hurts to urinate and producing only a few drops of urine at a time are other signs of a UTI. Children may leak urine into clothing or bedsheets. If a kidney is infected, children may complain of pain in the back or side below the ribs (Lin .,2008,Schroeder *et al.*,2005,Shaikh *et al.*,2007,McGillivray *et al.*,2005,Mori *et al.*,2007). Throughout childhood, the risk of having a UTI is 2 percent for boys and 8 percent for girls. Having an anomaly of the urinary tract, such as urine reflux from the bladder back into the ureters, increases the risk of a UTI. Boys who are younger than 6 months old who are not circumcised are at greater risk for a UTI than circumcised boys the same age.

Some of the urine will be examined with a microscope. If an infection is present, bacteria and sometimes pus will be found in the urine. A urine culture should also be performed on some of the urine. The culture is performed by placing part of the urine sample in a tube or dish with a substance that encourages any bacteria present to grow. Once the bacteria have multiplied, which usually takes 1 to 3 days, they can be identified (Lin .,2008,Schroeder *et al.*,2005,Shaikh *et al.*,2007,McGillivray *et al.*,2005,Mori *et al.*,2007). The reliability of the culture depends on how the urine is collected and how long the urine stands before the culture is started. If the urine sample is collected at home, it should be refrigerated as soon as it is collected. The container should be carried to the health care provider or lab in a plastic bag filled with ice. The health care provider may also order a sensitivity test, which tests the bacteria for sensitivity to different antibiotics to see which medication is

best for treating the infection (Lin .,2008,Schroeder *et al.*,2005,Shaikh *et al.*,2007,McGillivray *et al.*,2005,Mori *et al.*,2007). Children with recurrent UTIs maybe treated with preventative antibiotics that decrease the rate of microbiologicalrecurrence but not symptomatic recurrence. These conclusion must be viewed in light of the poor quality of evidence available (Smaill.,2007,Michael *et al.*,2005, Warren *et al.*,1999, Zalmanovici *et al.*,2010).

Aims of present study was establish prevalence rates and comparative of urinary tract infection in Iranian girl children's during of 2009 and 2010 year.

MATERIALS AND METHODS

Clinical Isolates

A total of 1027 consecutive non-repeat culture isolates of urine cultures were obtained from urine clinical over a period of 24 months (April 2009to December 2010). The isolates were identified on the basis of conventional microbiological procedures (Jalalpoor *et al.*,2007,2009,2011, Koneman *et al.*,2006, Washington *et al.*,2006).

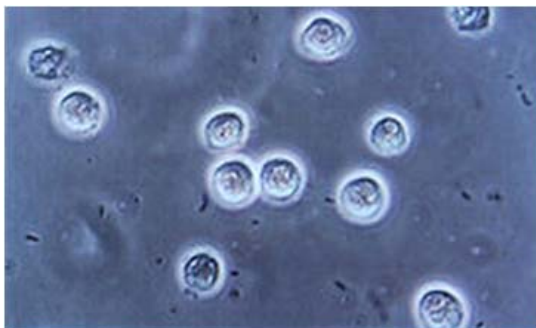


Fig. 1. Multiple rod-shaped bacteria at urinary microscopy

Culture Technique and Definitions

Urine cultures were routinely obtained on children younger than 10 years of age. Urine specimens were then sent to the microbiology laboratory in sterile containers by pneumatic tube. Urine was refrigerated, if not plated, within 10 minutes of receipt. Standard quantitative culture was performed by laboratory technologists (Jalalpoor *et al.*,2007,2009, Washington *et al.*, 2006).

A loop calibrated to deliver approximately 0.001 mL was used to inoculate blood agar (Merck) and MacConkey (Merck) agar plates. All plates were incubated at 35°C and examined daily for growth for 2 days. A positive result was defined as growth of a single urinary tract pathogen at e^{7-10^4} CFU/mL (Kathy *et al.*,1998).

RESULTS

According to result of this study in 2009 year, from 325 urine sample isolated from community, frequency of urinary trace infection in girl children was 5.1% and according to result of 2010 year, from 702 urine sample isolated from community, frequency of urinary trace infection in girl children was 5.3% (Fig 1).

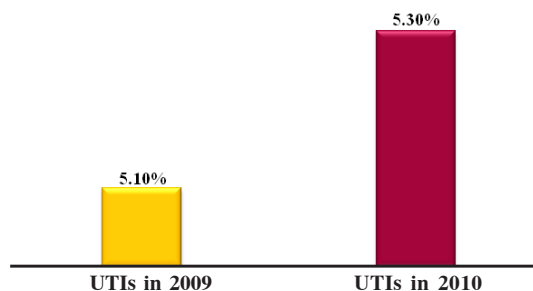


Fig. 2. Comparative Frequency of urinary tract infection in girl children's during the years 2009 and 2010

CONCLUSION

Urinary tract infection (UTI) is one of the most common infections of childhood. It distresses the child, concerns the parents, and may cause

permanent kidney damage. Characteristic symptoms of a urinary tract infection include pain with urination (dysuria), urinary frequency (needing to urinate frequently) and urgency (feeling a compelling urge to urinate) and loss of previously

established urinary control (for example, bedwetting). Nonspecific but common symptoms include fever (especially >102.2 F or 39 C) and abdominal pain. For some children less than 2 years of age, these more subtle problems may be the only indicator of a UTI. Associated symptoms of concern include flank pain, fever, and vomiting. Obvious blood in the urine (gross hematuria) as well as a positive family history for childhood urinary tract infections (especially in siblings) are also red flags and should raise the level of concern. Interestingly, the odor and color (with the exception of obvious blood) of the urine are not predictors of a UTI (Conway *et al.*,2007,Foster.,2008, Justice *et al.*,2006,Nicolle.,2008,U.S.2008). Bladder infections are most common in young women with 10% of women getting an infection yearly and 60% having an infection at some point in their life (Nicolle,2008). Pyelonephritis occurs between 18–29 times less frequently (Nicolle,2008). According to the 1997 National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey, urinary tract infection accounted for nearly 7 million office visits and 1 million emergency department visits, resulting in 100,000 hospitalizations (Epidemiology,2010). Nearly 1 in 3 women will have had at least 1 episode of urinary tract infections requiring antimicrobial therapy by the age of 24 years. The risk of urinary tract infection increases with increasing duration of catheterization. In non-institutionalized elderly populations, urinary tract infections are the second-most-common form of infection, accounting for nearly 25% of all infections (Epidemiology,2010). The condition rarely occurs in men who are younger than 50 years old and who did not undergo any genitourinary procedure. However, the incidence of urinary tract infections in men tends to rise after the age of 50.

According to statistics from 1990, the prevalence of urinary tract infections in pre-school and school girls was 1% to 3%, nearly 30-fold higher than that in boys (The epidemiology,2010). Also, the statistics from the same year show that approximately 5% of girls will develop at least one urinary tract infection in their school years. In what concerns the symptoms of the condition, bacteriuria appears to increase in prevalence with age in women, still being 50 times greater than the one in males. It is estimated that bacteriuria will be experienced by 20 to 50% of older women and 5 to 20% of older men (Gould *et al.*,2010,Jepson.,2008, Modgil.,2006, Perrotta *et al.*,2008, Williams *et al.*,2006). Community studies suggest that boys younger than 1 year of age and girls younger than 5 years of age are most at risk for UTI. The literature estimates that the prevalence of UTI in febrile children presenting for outpatient evaluation ranges from 1% to 20% (Crain *et al.*,1990, Hoberman *et al.*,1993, Kathy *et al.*,1998). Observational studies have found that UTIs have been diagnosed in Sweden in at least 2.2% of boys and 2.1% of girls by age 2 years, (Jakobsson *et al.*,1999) in 7.8% of girls and 1.7% of boys by age 7 years, (Hellstrom *et al.*,1991) and in the UK in 11.3% of girls and 3.6% of boys by age 16 years(Coulthard *et al.*,1997). The studies vary in their definition of UTI, method of urine collection, and eligibility criteria. Most have small sample sizes, and none have been true prevalence studies in which data are collected on all children (Kathy *et al.*,1998).

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