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URINARY BACTERIAL PROFILE IN SEXUALLY ACTIVE WOMEN

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Abstract

Urinary tract infections (UTIs) are mainly the general bacterial infection and a common problem in sexually active women. Women are particularly at risk because of their short urethra, and certain behavioral factors which include delay in micturition, sexual activity and the use of diaphragms and spermicides. In pregnancy infections of urinary tract is related through significant morbidity for the mother and the baby both. The bacterial profile isolated from urine samples of sexually active women at Ziauddin Hospital Karachi. The study includes all women aged between 25-45 years. A total of 25 urine samples from sexually active women were used in this study. Organisms were identified from mid-stream clean catch urine samples and antibiotic susceptibility was performed using bacteriological standard tests. All the 25samples analyzed, were positive for bacterial infection. Although *E. coli* (52%) as usual, the most common pathogen implicated in UTI. Other isolated organisms include Klebsiella (20%), Enterobacter (16%), Enterococcus, Pseudomonas, and Streptococcus Group D (4%).E.coli is the most common pathogen involved in UTI in sexually active women.

Key Words: E. coli, Klebsiella, Enterobacter, Enterococcus, Pseudomonas, and Streptococcus Group D.

Introduction

Urinary tract infection (UTI) is defined as the presence of microbial pathogens in the urinary tract with associated symptoms (Pushpalatha, 2008). It is usually due to bacteria from the digestive tract which climbs the opening of the urethra and begins to multiply to cause infection (Rahimkhani *et al*., 2008 & Okonko *et al*., 2009). When it affects the lower urinary tract it is known as cystitis and when it affects the upper urinary tract it is known as pyelonephritis (Pushpalatha, 2008). UTI are classified as uncomplicated or complicated (Stamm *et al.*, 2001). Uncomplicated UTIs occur in sexually active healthy female patients with structurally and functionally normal urinary tracts. Complicated UTIs are those that are associated with co morbid conditions that prolong the need for treatment or increase the chances for therapeutic failure. These conditions include abnormalities of the urinary tract that impede urine flow, the existence of a foreign body (e.g., indwelling catheter, stone), or infection with multidrug resistant pathogens (Hootomn, 2000 & Stapelon, 2003). The severity of UTI depends on the bacteria virulence and susceptibility of the host (Jadhav, 2011). This infection varies in patients with

different gender, age, and presence of associated genitourinary abnormalities (Nicolle (2002). UTI is the most common infectious diseases among women (Chomarat, 2000). They are particularly common among the female population with an incidence of about 1% of school-aged girls and 4% of women through child-bearing years. Incidence of infection in females increases directly with sexual activity and child-bearing. In the women, 25-30% of women between 20-40 years of age will get UTIs (Wilma, 2002). Urinary tract infections (UTI) are one of the most common bacterial infections seen in children. It has been estimated that UTI are diagnosed in 1% of boys and 3-8% of girls (Riccabona, 2003). In the first year of life UTI is more prevalent in boys with rates of 2.7% compared with 0.7% in girls (Schalger, 2001). Approximately 20% of all UTIs occur in men (Griebling, 2005). In contrast to men, women are more susceptible to UTI, and this is mainly due to short urethra, absence of prostatic secretion, pregnancy and easy contamination of the urinary tract with faecal flora (Haider *et al*., 2010). Urinary tract infection in pregnancy is associated with significant morbidity for both mother and baby. The combination of mechanical, hormonal and physiologic changes during pregnancy contributes to significant changes in the urinary tract, which has a profound impact on the acquisition and natural history of bacteriuria during pregnancy (Taheer *et al*., 2009). Urinary tract infections in pregnancy may lead to unfavorable pregnancy outcomes and complications like preterm delivery, low birth weight, pre-eclamptic toxaemia and anemia, so it must always be screened and treated timely (Colgan *et al*., 2006). More than 95% of urinary tract infections are caused by a single bacterial species. *E. coli* is the most frequent infecting organism in acute infection (Jellheden *et al*., 1996). Klebsiella sp, *P. aeruginosa* and Enterobacter sp are less frequent offenders. Less commonly, Enterococci, vaginalis & Urealyticum are also known agents in UTIs. Gram-positive organisms are even less common in which Group B Streptococcus, *S. aureus, S. saprophyticus* and *S. haemolyticus* are recognized organisms (Ronald, 2002).

The main objective of this study was to evaluate the occurrence of the main bacteria responsible for urinary tract infection in women.

Materials and Methods

Urine culture: A sterile wire loop was used for the semi-quantitative method and plating. A loopful of the well mixed urine sample was inoculated Mac Conkey, Manitol Salt Agar and Blood Agar. All plates were then incubated at 37°C aerobically for 24h. Then the plates were observed macroscopically for bacterial growth. Isolation and identification of cultured isolates was done according to the standard bacteriological techniques. Colony morphology, hemolytic pattern, Gram reaction and microscopic features were used as primarily identification criteria. Biochemical tests, namely indole, citrate, oxidase, catalase, H_2S production, lysine decarboxylase, lactose fermentation, urea hydrolysis and gas production were performed for identification for Gram negative. Catalase, coagulase test and haemolysis pattern on blood agar were used for identification of Gram positive bacteria.

Results

The age distribution of all females was 25-45. A total of 25 urine samples from clinically suspected patients were analyzed for UTI. All the samples were found to be UTI. From the 25 isolates 20 were Gram negative while 05were Gram positive bacteria. As estimated the frequently found bacteria *E. coli* (52%) was isolated from thirteen samples. Besides this *Klebsiella* (20%) was isolated from five samples while *Pseudomonas* and *Enterobacter* (4%) were isolated from one sample. Among Gram positives *Enterococcus* isolated from four samples and *Streptococcus g*roup D (4%) was isolated from one sample.

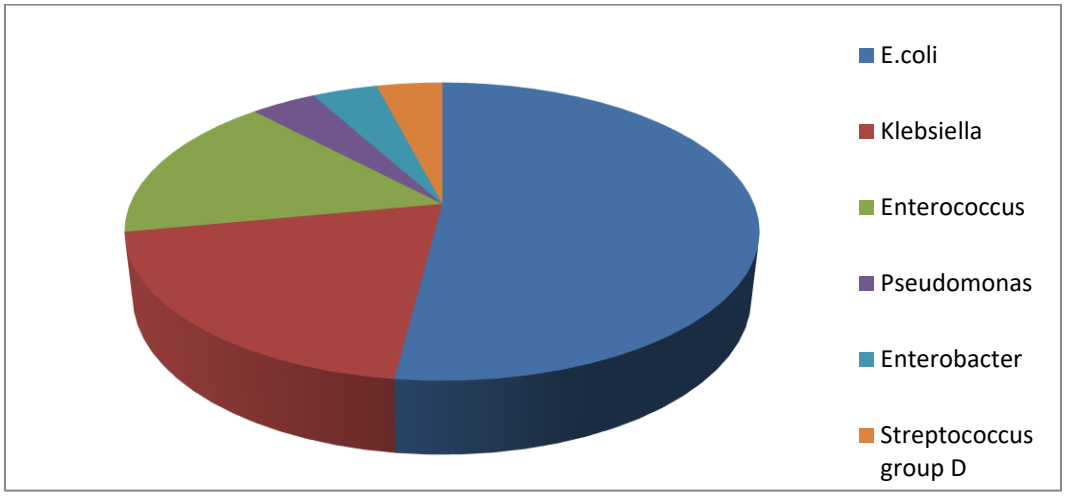

Figure 1. Pie Chart Showing the antimicrobial susceptibility.

Discussion

Women are at increased threat of developing UTI chiefly due to hormonal changes during pregnancy or in menopause these make it easier for bacteria to travel up the urethra to the kidney and lead to the development of UTIs (Loh, & Sivalingam, 2007 & Chakupurakal *et al*., 2010). The frequency of UTI is greater in women as compared to men (Okonko *et al*., 2009 & Schaffer *et al*., 2001). The uropathogens identified in our study are similar to those of many other studies conducted in different countries either in the region or internationally (Astal & Sharif, 2002). The prevalence of Gram-positive cocci was not high in our study; this is similar to other studies in different countries (Astal & Sharif, 2002 & Kothari & Sagae, 2008). The most prevalent organism identified in our study was *E .coli* which is similar with previous works in Ethiopia and other countries (Sescon *et al*., 2003 & Negash & Ketema, 2007). Other bacterial agents include species of Klebsiella, Enterobacter, Proteus, Pseudomonas, Staphylococcus, Streptococcus and *Enterococcus faecalis* (Nicolle, 2001 & Gorbach *et al*., 2004).

Conclusion

Ourstudy shows that the most prevalent bacteria is *E.coli* that involved in Urinary tract infections in sexually active women.

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