



## Analysis of microorganisms responsible for Urinary Tract Infection in patients coming to Mayo Hospital Lahore.

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### ABSTRACT

**Objective:** To analyze the incidence of microorganisms responsible for UTI and calculate the occurrence in males and females.

**Design of study:** Cross sectional study/ Prospective study.

**Place of Study:** Study was conducted in Urology department in Mayo Hospital Lahore.

**Duration of study:** 9 months (August 2017- April 2018).

**Materials and Methods:** Patients between the ages of 19-75 years were selected for the study of UTI. Mostly recorded patients were between 20-40 years of age. These patients were selected on random basis. No biased criteria was used. All these patients visited the Urology department of Mayo Hospital Lahore with the burning micturition. Data collection was done using questionnaire.

**Results:** Total 200 patients were selected and it included 100 males and 100 females. Urine samples were taken and sent to the authentic laboratory for culture. In positive cases most common microorganism that were found included E.coli, Klebsiella, Pseudomonas Aeruginosa, Proteus mirabilis, Staphylococcus Aureus and Candida species.

**Conclusion:** The study showed that incidence of UTI is more common in women than men and that micro bacteria E.coli is the main culprit in most of these infections.

**Keywords:** Escherichia Coli, microorganism, UTI

**Introduction:** Signs and symptoms of UTI are clinically different from asymptomatic type of bacteriuria which can also be a cause of kidney disease. This infection of the urinary tract seconds only to Hepatitis B which is the most common

disease worldwide and a major issue for public health. Nearly 150 million cases of UT infections are seen in the world each year. In under developed countries, UT infection is the most common type of microbial infection that is faced by clinicians on daily basis. A person of any sex and any age from infants to old age can get infected by this disease. Signs and symptoms vary in patients but generally these are sharp pain in groin region on urination having burning sensation, dark colored urine, blood in urine in advance cases, urinary hesitancy, high temperature with chills and rigors and urinary urgency. When the bladder is filled to its fullest capacity the patient may feel pain in loin region, pain in rectal region in males and pain in pelvis in females. Clinical features in neonates and children can vary to some extent including jaundice and vomiting. In infected elder children incontinence of the infected urine can be found. Different flora and colonies of bacteria are normal in human body which are inhabitant of the body. The infection occurs when the bacteria enter the urinary tract and ascends the urinary pathway and it occurs most commonly in females because of the short urethra. Because of close approximation of anus and vagina in females the bacteria can enter from anus into vagina during child birth and can ascend the urinary tract. Using the antibiotics destroys the normal flora which increases susceptibility to infection. Lactobacillus type of bacteria is found normally in the vagina producing hydrogen peroxide and lactic acid which gives the vagina its particular odour. During menstrual phase the common flora of bacteria are disrupted which increase chances of infection. The risk is higher in females also because of close approximation of vagina and anus and microbes can enter the female



urethra during sexual intercourse and can ascend the urinary tract causing infection. Another reason for infection being more common in females is the presence of microbes in skin around the anus which are mostly the flora of gastrointestinal tract. Encapsulated microbes are responsible for infections in infants and men. Prostate gland enlargement in older men is one of the most common reason for UTI which obstructs the normal flow of urine and the urine which resides inside the body is the cause of possible infection. In part, the UTI can also be caused by the urinary tract stones which can obstruct the flow of the urine. To decrease the mortality and morbidity it is vital to diagnose the disease to provide proper treatment. Proper diagnosis and authentic culture is needed to treat the disease completely.

**Materials and Methods:** Patients between the ages of 19-75 years were selected for the study of UTI. Mostly recorded patients were between 20-40 years of age. These patients were selected on random basis. No biased criteria was used. All these patients visited the Urology department of Mayo Hospital Lahore with the burning micturition. Data collection was done using questionnaire. To analyze the data SPSS was used. Data management was done using questionnaire and analyzed on routine basis.

**Results:** Out of 200 patients 170 cases were found to be culture positive. Prevalence was found to be higher in females i.e. 114 cases out of 170 (67.1%) and in males it was 56 cases out of 170(32.9%). The patients which took part in this study were of the ages between 19 to 75 years. Urine samples were taken and sent to the authentic laboratory for culture. In positive cases most common microorganism that were found included E.coli, Klebsiella, Pseudomonas Aeruginosa, Proteus mirabilis, Staphylococcus Aureus and Candida species. The main microbe responsible for the infection was E.coli followed by Proteus and candida being the least one. In females 27% of the infection was caused by the E.coli and in men 13 % showing that in both genders E.coli is the main microbe responsible for infection.

**Discussions:** In hospitals and in public UTI presents a serious problem. UTI is found to be the most common problem in emergency and in outdoor according to different surveys. Per year hundreds and thousands patients have to be admitted in hospital because of UTI. A big financial burden is faced by the hospitals and the patients due to large number of UTI cases reaching

up to 7 million is outdoors and 1.1 million in emergency. Around 1.7 billion is paid by the patients every year because of UTI. Different genders and different age groups have variable incidence. Men are affected less because of UTI as compared to women. Around 35% of women suffer from UTI at some stage in life.

According to this data, men are affected less than women and 20 to 40 years is the age at which maximum chances of infection are present. Prevalence was found to be higher in females i.e. 114 cases out of 170 (67.1%) and in males it was 56 cases out of 170(32.9%). Ahmed and Avasarala reported incidence rate of around 12.7% which is close to seen in this research. But incidence of 4.2% is shown by Singh MM et al. which is significantly lower than this. In under developed countries like Bangladesh where patient to doctor ratio is high 27% prevalence have been reported in study carried by Bashir et al. and Rahman et al. and the study findings are in accordance with other researches. More females are affected by UTI than males. Higher fraction of positive results was found to be in women around 90.12% and 9.88% in men for the samples taken and examined. Research work done by Astal et al, Khalifa et al. is consistent in results with this. (16.4% of women with UTI in Dhaka). Intestinal microbes of Gram-negative type are the major microbes resulting in UTI and it includes E.coli, Klebsiella, Pseudomonas Aeruginosa, Proteus mirabilis, Staphylococcus Aureus and Candida Albicans species. E.coli is the commonest type found in these UT infections (80-85%). In this research work E.coli has the highest value of 39%, followed by Pseudomonas Aeruginosa 29%, Klebsiella 19% and staph. Aureus, Proteus Mirabilis and Candida Albicans species lower than 10%. Higher prevalence of E.coli has been reported by other researchers (66.67% and 77.8% patients respectively) by Basir et al. and Saber et al. A research was carried out in Lahore in 2014 showing high prevalence of E.coli of 90%, Staph. Aureus 9.4%, Proteus Mirabilis 5.4% and Pseudomonas Aeruginosa 5.2% in UT infections. In all the studies done so far E.coli has been at the top for causing UTI.

**CONCLUSION:** Intestinal microbe E.coli is the most common microbe responsible for UT infections and the prevalence of this disease is far greater in females than males. Early diagnosis based on culture and prompt treatment with antibiotics is necessary for the proper patient management.



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