



Bacteriological Profile and Antibiotics Sensitivity Pattern of Urinary Tract Infection Patient in Tertiary Care Centre.

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Abstract-

Introduction- The Urinary Tract Infections (UTIs) leading bacterial infection, mostly occur in all the community and hospital setups irrespective with their age and gender . At least half of women get experiences of urinary tracts infection for once in the life , due to anatomical structure of female urogenital system. **Material and Method-** This study was conducted in the central laboratory of the Department of Microbiology, Dhiraj Hospital, Vadodara (Gujarat) between from January 2024 to June 2024. The study evaluated bacteriological profile and antibiotics sensitivity pattern of 175 clinically suspected of Urinary Tract Infections (UTIs), All 175 patients with clinical manifestation of UTI instructed to collect midstream portion of their urine by the clean catch technique in sterile wide mouth screw capped container which were distributed to them. **Result-** This study was carried out at central laboratory of the Department of Microbiology, Dhiraj Hospital, Vadodara (Gujarat), between from January 2024 to June 2024. Total 175 clinical manifestation of Urinary Tract Infections (UTIs) patient's urine samples were. Out of these, only 54(30.85%) samples found positive microorganism growth. During analysis 97 and 78 samples were from female gender and male gender respectively, out of this 36 (66.66%) and 18 (33.33%) cases were found from female and male gender respectively. This study shows that maximum cases of Urinary Tract Infections (UTIs) were found in 21-40 age groups which were 26. **Conclusion-** The study reveals Urinary Tract Infections (UTIs) is much more common in female gender due to their differing anatomy. E. coli is the predominant isolated pathogen in Urinary Tract Infections (UTIs) patients and study shows that bacterial which were isolated are resistant to the routinely used antimicrobial drugs.

Key words- UTIs (Urinary Tract Infections), CLSI (Clinical Laboratory Standards Institutes).

Introduction-

The Urinary Tract Infections (UTIs) leading bacterial infection ¹⁻², mostly occur in all the community and hospital setups irrespective with their age and gender ³⁻⁴. At least half of women get experiences of urinary tracts infection for once in the life⁵, due to anatomical structure of female urogenital system. Females have short urethra and close proximity of urethral meatus to anus ⁶⁻⁷. Higher prevalence is seen in female during gestation period and in

those women who are very sexually active⁸. The Asymptomatic bacteriuria means presence of bacteria in urine without clinical feature of urinary tract infections (such as frequency, urgency, dysuria or fever) or other abnormal findings. In Any part of the urinary system from the urethral meatus to the renal cortex of kidney involved in Urinary Tract Infections . Although Urinary Tract Infections (UTIs) is more common in sexual active females, but it is not categorized as a sexually transmitted disease⁹⁻¹⁰. Clinical manifestations of Urinary Tract Infections (UTIs) are flank pain and fever and which is often associated with chills, frequency, urgency, dysuria and pyuria and haematuria may be seen¹¹.

Adherence of bacteria to epithelial cells plays an important role in the colonization and infection of mucous membranes¹⁷. The role of bacterial adherence in the pathogenesis of UTI is not clear, but colonization of the urogenital epithelium of susceptible individuals by specific bacteria is associated with successful microbial invasion of the urinary tract¹⁸.

Material and Method-

This study was conducted in the central laboratory of the Department of Microbiology, Dhiraj Hospital, Vadodara, Gujarat between from January 2024 to June 2024. The study evaluated bacteriological profile and antibiotics sensitivity pattern of 175 clinically suspected of Urinary Tract Infections (UTIs), All 175 patients with clinical manifestation of UTI instructed to collect midstream portion of their urine by the clean catch technique in sterile wide mouth screw capped container which were distributed to them.

Personal education and training given to the sum of women, how clean periurethral area and perineum before sample collection. Each specimen was appropriately labelled, transported to the microbiology section of central laboratory, early as possible with proper maintained cold chain. After receiving samples to laboratory, both selective and non-selective media like MacConkey agar, Blood agar were prepared per their manufacturing specification. Each urine specimen completely streaked over all quadrants by using of sterile calibrated loop and then agar plate incubated at 37 °C for 24 hours in incubator with proper labelling.

On next day, Results were interpreted on the basis of the appearance of microbial growth on culture media and microscopic examination using the Gram staining method, and interpretation was performed using standard biochemical reaction tests. Several bacteria from the Enterobacteriaceae family have been identified using various biochemical reactions such as indole test, H₂S production-based catalase test, citrate utilization test, hanging drop test, urease test, oxidase test, sugar fermentation test, and other tests. For gram-positive bacteria, coagulase, catalase, bacitracin, and optochin disk tests and other tests were performed. The antimicrobial susceptibility test was performed on Muller Hilton agar (MHA) using the Kirby-Bauer disc-diffusion antibiotic sensitivity test method in accordance with the Clinical Laboratory Standards Institutes (CLSI) guidelines¹².

Following drugs were used for the disc-diffusion antibiotic sensitivity test: Ampicillin-Sulbactam (AS), Cephalexin (PR) Norfloxacin (NX), Ceftriaxone (CI), Ciprofloxacin (RC), Nitrofurantoin (FD), Chloramphenicol (CH), Piperacillin-tazobactam (PT) & Imipenem (IPM) were placed aseptically on agar plate

Result-

This study was carried out at central laboratory of the Department of Microbiology, Dhiraj Hospital, Vadodara (Gujarat), between from January 2024 to June 2024. Total 175 clinical manifestation of Urinary Tract Infections (UTIs) patient's urine samples were.

Out of these, only 54(30.85%) samples found positive microorganism growth. During analysis 97 and 78 samples were from female gender and male gender respectively, out of this 36 (66.66%) and 18 (33.33%) cases were found from female and male gender respectively. This study shows that maximum cases of Urinary Tract Infections (UTIs) were found in 21-40 age groups which were 26. Out of 54 isolated organisms, 23 (42.5%) were

Escherichia coli, 15(27.7%) were Klebsiella pneumoniae, 11 (20.37%) were Pseudomonas aeruginosa and 05 (9.25%) were Enterococcus.

Table 1: (Prevalence of Urinary tract infection)

| | total | positive |
|--------|-------|----------|
| male | 78 | 18 |
| female | 97 | 36 |
| total | 175 | 54 |

Table 2: (Age groups wise distribution of UTI positive cases)

| Age agroup | positive |
|------------|----------|
| 0-20 | 06 |
| 21-40 | 26 |
| 41-60 | 14 |
| >60 | 08 |

Table 3: (Frequency of bacterial agent isolated from urine samples)

| organisms | No. of isolates |
|------------------------|-----------------|
| Escherichia coli | 23 |
| Klebsiella pneumonia | 15 |
| Pseudomonas aeruginosa | 11 |
| Enterococcus spp. | 05 |

Table 4: (Antibiotic susceptibility of isolated organisms)

| Antibiotics | Sensitivity (%) |
|-----------------------------|-----------------|
| Imipenem (IPM) | 96.86% |
| Piperacillin-tazobactam(PT) | 95.78% |
| Chloramphenicol (CH) | 78.09% |
| Nitrofurantoin (FD) | 72.89% |
| Ciprofloxacin (RC) | 23.67% |
| Ceftriaxone (CI) | 25.45% |
| Norfloxacin (NX) | 18.56% |
| Cephalexin (PR) | 10.78% |
| Ampicillin-Sulbactam (AS) | 1.78% |

Discussion-

This study revealed that out of 175 Urinary Tract Infections (UTIs) patients 54 (30.85%) found positive bacterial growth which much similar Singh VP et al. study¹⁵. Gender wise distribution of Urinary Tract Infections (UTIs) patients also given much similar result which was reported in a study by Angoti et al.¹³, Solanki et al.¹⁴ and Bency et al.¹⁶ (Table-05). In our study, E. coli (42.5%) was predominant organism isolated which were similar to study of Angoti et al. and Solanki et al. The present study also revealed that maximum positivity found in 21-40 age group which can compared with Bency et al study

The study revealed that Urinary Tract Infections (UTIs) is mostly affected in female gender due to their differing anatomy. E. coli is the predominant isolated pathogen in Urinary Tract Infections (UTIs) patients & study shows that bacterial which were isolated are resistant to the routinely used antimicrobial drugs.

Conclusion-

The study reveals Urinary Tract Infections (UTIs) is much more common in female gender due to their differing anatomy. *E. coli* is the predominant isolated pathogen in Urinary Tract Infections (UTIs) patients and study shows that bacterial which were isolated are resistant to the routinely used antimicrobial drugs. The Appropriate measure may help to reduce UTIs, we recommend routine UTIs screening of high risk group like female gender, pregnancy, hospitalized patients indwelling catheter and married individual to prevention of UTI at lower cost.

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