**Escherichia coli** as the commonest uropathogen in a tertiary care hospital.

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**ABSTRACT**

The main aim of this study is to see which organism is the commonest uropathogen. A total of 870 samples of urine were received from January 2011 to October 2013 (a period of 34 months) from the inpatient & outpatient departments including surgical Preoperative & Post operative cases. They were cultured and 104 were positive for growth. Antibiotic susceptibility pattern of these patients was also studied which revealed that the organisms are sensitive to Amikacin, Levofloxacin, Cefotaxime, Nitrofurantoin, Gentamycin. They showed resistance to Co-trimoxazole, Amoxycillin, & Ampicillin.

**Keywords:** Escherichia coli, Uropathogen, Culture & Sensitivity

**INTRODUCTION**

Escherichia coli is the commonest organism causing Urinary Tract Infection. Escherichia coli account for the large majority of naturally acquired urinary tract infections. The German Pediatrician Theodor Escherich was the first identified Escherichia coli under the name Bacterium coli commune (1885).

Escherichia coli that cause UTI often originate in the gut of the patient. The bacteria may gain access to the urinary tract by the ascending or the haematogenous route. The ascending route of infection is believed to be usual one. The bacteria from the fecal flora spread to the perineum and from there they ascend in to the bladder.

Urinary Tract Infection occurs more often in females than in males. Shorter, and wider female urethra appears to be less effective in preventing access of the bacteria to the bladder. UTI remains the most common bacterial infection in the human population, despite the widespread availability of antibiotics[1]. Antibiotics are given empirically before the laboratory results of urine culture are available. To ensure appropriate therapy, correct knowledge of the organisms that cause UTI and their antibiotic susceptibility is mandatory[2].

The high incidence of Urinary tract infection in pregnant women can be attributed to impairment of urine flow due to pressure on the urinary tract and due to hormonal changes. About 5 to 7 percent of pregnant women have been reported to have urinary infection without any symptoms. Such asymptomatic bacteriuria, undetected and untreated may lead to symptomatic infection later in pregnancy, pyelonephritis and hypertension in the pregnant women, as well as to prematurity and perinatal death of the fetus.

Relative infrequency of Urinary tract infection in men may be due to longer male urethra and the bactericidal activity of the prostatic fluid. Other causes of urinary stagnation that may predispose to UTI include enlarged prostate, urinary calculi, congenital malformations and neurological disorders. Catherization and cystoscopy may introduce endogenous or exogenous bacteria in to the bladder leading to infection.
Patterns of antibiotic resistance in a wide variety of pathogenic organisms may vary even over short periods and depend on site of isolation and on different environments, periodic evaluation of antibacterial activity is needed to update this information\cite{3,4,5}.

**MATERIALS AND METHODS**

Urine samples received at the Microbiology laboratory were plated on Macconkey and Blood agar plates incubated at 37 degree C for 48 hours. Identification of pure isolates was done by observing morphological, cultural and biochemical characters\cite{6}.

Antibiotic sensitivity testing was performed using the Kirby-Bauer disc diffusion method according to the Clinical and Laboratory Standards Institute Guidelines\cite{7}.

**RESULTS**

A total of 870 urine samples were collected from both in patients & out patients in Bhaskar General Hospital from January 2011 to end of October 2013. They were cultured and out of these 104 were positive for growth. The bacteria is isolated is as follows:-

Table 1: Bacteria Isolated in Urinary tract infection.

<table>
<thead>
<tr>
<th>Bacteria Isolated</th>
<th>Number of Isolates</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escherichia coli</td>
<td>64</td>
<td>61.54%</td>
</tr>
<tr>
<td>Klebsiella species</td>
<td>18</td>
<td>17.30%</td>
</tr>
<tr>
<td>Proteus species</td>
<td>14</td>
<td>13.47%</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>06</td>
<td>5.77%</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>02</td>
<td>1.92%</td>
</tr>
</tbody>
</table>

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**DISCUSSION**

Escherichia coli is the commonest isolate. klebsiella pneumoniae was second commonest. In a study from Delhi, Escherichia coli was found to be the commonest organism isolated followed by Klebsiella, Staphylococcus aureus, Proteus species, and Pseudomonas aeruginosa\cite{8}. The first portion of urine that flushes out commensal bacteria from the anterior urethra is discarded. The next portion of the urine (midstream sample) is collected directly in to a sterile wide mouthed container and transported to the laboratory.

In most patients with bacterial cystitis, quantitative examination of a mid-stream specimen will accurately show the presence of significant bacteriuria.
Urine is a good medium for the growth of coliforms and other urinary pathogens, and hence delay in processing will vitiate the results of quantitative culture because contaminating bacteria, from anterior urethra can readily multiply to reach significant number. If delay of more than 1 to 2 hours is unavoidable, the specimen should be refrigerated at 4 degree C or by transport in some form of refrigerated container, or by collection and transport in a container with boric acid at a final, bacteriostatic concentration of 1.8 percent.

CONCLUSION

In the present study Escherichia coli was found to be the commonest uropathogen. Before starting treatment for UTI, urine should be sent for culture & sensitivity and the correct antibiotic therapy should be administered.

REFERENCES