PATHOGENS IN URINARY TRACT INFECTIONS
(Six months hospital based cross sectional descriptive study)

OBJECTIVE: To determine the frequency of urinary tract infection and associated pathogens at tertiary care hospital.

METHODS AND DESIGN: This descriptive type cross sectional study was conducted at tertiary care hospital. All patients above 12 years of age, of either gender present with shaking chills, fever, pain or burning when urinating, altered urine colour, urethral discharge, frequent and urgent need to urinate, blood in urine, discomfort in the middle of the lower abdomen (suprapubic pain and flank pain) with nausea and vomiting were enrolled and evaluated for presence of urinary tract infections (UTIs) and associated pathogen through urine detail report (urine DR) and urine for culture and sensitivity (C/S).

RESULT: Out of 110 suspected cases of UTI, 85 (77%) patients were found to be positive for urinary tract infection with mean age 34.73 ± 7.61 (SD). The pathogens identified were Escherichia coli (61%), Staphylococcus aureus (13%), Proteus (17%), Pseudomonas aeruginosa (1%) and Klebsiella (8%). The fever was observed in 72(85%) subjects, chills in 60(71%) patients, nausea and vomiting in 42(49%) subjects, sweating in 58(68%) patients, blood in the urine 52 (61%) patients, pain or burning when urinating in 75(88%) patients, altered urine colour in 20(24%) subjects, urethral discharge in 16(19%) patients, frequent and urgent to urinate in 80(94%) subjects and suprapubic pain in 38(45%) patients.

CONCLUSION: The female gender was predominant, and identified urinary pathogen were Escherichia coli, Staphylococcus aureus, Proteus, Pseudomonas aeruginosa and Klebsiella.

KEY WORDS: urinary tract infection (UTI), Escherichia coli (E. coli), Staphylococcus aureus, Proteus, Pseudomonas aeruginosa and Klebsiella.

INTRODUCTION:
A urinary tract infection (UTI) is a bacterial infection that affects any part of the urinary tract. The main causative agent is Escherichia coli. The urine contains a variety of fluids, salts, and waste products; it usually does not have bacteria in it.1 When bacteria get into the bladder or kidney and multiply in the urine causes UTI. The most common type of UTI is a bladder infection which is also often called cystitis. Another kind of UTI is a kidney infection, known as pyelonephritis, and is much more serious. Although they cause discomfort but urinary tract infections can usually be quickly and easily treated with a short course of antibiotics.2 Infections of the urinary tract are the second most common type of infection in the body. Urinary tract infections (UTIs) account for about 8.3 million doctor visits each year. The risk of developing a UTI may be increased by a number of factors, especially sexual intercourse. The use of spermicides, particularly in combination with a diaphragm also increases the risk of UTI in women. Men who engage in anal intercourse are more likely to become infected, as are men who are uncircumcised. Men, women, and children with underlying health problems may also be at higher risk for developing a UTI, including use of a bladder catheter, a recent procedure or surgery involving the urinary tract, an anatomic abnormality or blockage of the urinary tract, the inability to empty the bladder completely, pregnancy, diabetes, or age <65 years. The leading risk factor for bacteriuria is the duration of catheterization: With each day of catheterization, the prevalence of bacteriuria increases 3% to 10%.3 The typical symptoms of acute cystitis are pain or burning when urinating, frequent and urgent need to urinate, blood in the urine, discomfort in the middle of the lower abdomen
It usually requires about 48 hours for results to return. It usually requires about 48 hours for results to try and grow bacteria in a laboratory. Urinalysis commonly shows white blood cells, red blood cells, and nitrates in the urine while special urine tests (urine culture and sensitivity) may be done to determine the type of bacteria in the urine and the appropriate antibiotic for treatment. Simple bladder infections are usually diagnosed based upon symptoms alone. This is especially true if a woman has frequent UTIs and can recognize the symptoms easily, however urine culture is a test that uses a sample of urine to try and grow bacteria in a laboratory. It usually requires about 48 hours for results to return. *Most UTIs can be treated with oral antibiotics such as trimethoprim, cephalosporins, nitrofurantoin, or a fluoroquinolone (e.g. ciprofloxacin or levofloxacin).* By keeping and considering such debate in mind the present study was conducted in the department of medicine by focusing the urinary tract infections and associated pathogens. The study will provide the local epidemiological data in relation to urinary tract infections.

**PATIENTS AND METHODS:**
This cross sectional descriptive study was carried out in the department of medicine at Liaquat University Hospital (a tertiary care 1500 bedded hospital) Hyderabad from March 2008 to August 2008. All patients above 12 years of age, of either gender present with shaking chills, fever, pain or burning when urinating, altered urine colour, urethral discharge, frequent and urgent need to urinate, blood in the urine, discomfort in the middle of the lower abdomen (suprapubic pain), cloudy urine, foul or strong urine odor, fever (not everyone will have a fever), painful sexual intercourse. *

*If the infection spreads to the kidneys, symptoms may include chills and shaking, fatigue, fever above 102 ºF, which lasts for more than 2 days, flank (side) pain, flushed, warm, or reddened skin, general ill feeling, mental changes or confusion (in the elderly, these symptoms often are the only signs of an UTI), nausea, vomiting and severe abdominal pain (sometimes).* Urinalysis usually shows white blood cells, red blood cells, and nitrates in the urine while special urine tests (urine culture and sensitivity) may be done to determine the type of bacteria in the urine and the appropriate antibiotic for treatment. Simple bladder infections are usually diagnosed based upon symptoms alone. This is especially true if a woman has frequent UTIs and can recognize the symptoms easily, however urine culture is a test that uses a sample of urine to try and grow bacteria in a laboratory. It usually requires about 48 hours for results to return. *Most UTIs can be treated with oral antibiotics such as trimethoprim, cephalosporins, nitrofurantoin, or a fluoroquinolone (e.g. ciprofloxacin or levofloxacin).* By keeping and considering such debate in mind the present study was conducted in the department of medicine by focusing the urinary tract infections and associated pathogens. The study will provide the local epidemiological data in relation to urinary tract infections.

**RESULTS:**
Out of 110 suspected cases of UTI, 85 (77%) patients were found to be positive for urinary tract infection with mean age 34.73 ± 7.61 (SD) and the observation of the study is mentioned in Table: 01. Of eighty five, 55(50%) patients presented through causality outpatient department (COD), twenty five (23%) through outpatient department (OPD) and 05 were referred from different wards i.e. Gynaecology & Obstetrics and Surgery where they were initially admitted but during hospitalization they were complained of urinary symptoms (pain, burning, urgency, urethral discharge) and fever were then referred to medical department for specific management after an documented evidence of urinary tract infection i.e. the report of urine culture and sensitivity. The gender distribution is shown in Table: 02. The fever was observed in 72(85%) subjects, chills in 60(71%) patients, nausea and vomiting in 42(49%) subjects, abdominal / flank pain in 75 (88%) patients, headache in 28(33%) patients, sweating in 58(68%) patients, blood in the urine 52 (61%) patients, fatigue in 22(26%) patients, pain or burning when urinating in 75(88%) patients, altered urine colour in 20(24%) subjects, urethral discharge in 16(19%) patients, frequent and urgent need to urinate in 80(94%) patients, discomfort in the middle of the lower abdomen (suprapubic pain) in 38(45%) patients. Nine (11%) subjects were un-circumcised. Sixteen subjects (19%) had history of urethral catheterization and 13 (15%) were already catheterized since 10-15 days before arrived at casualty department of hospital. Twenty five (29%) patients left ward against the medical advice (LAMA), five (6%) patients left the ward on request (discharge on request) while fifty five (65%) patients were recovered i.e. became healthy and discharged from hospital.

**DISCUSSION:**
The prevalence of UTI varies widely by age, gender and circumcision status and this confirms the importance of demographic

**TABLE: 01**

<table>
<thead>
<tr>
<th>PATHOGENS</th>
<th>n = 85 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staphylococcus aureus</td>
<td>11 (13%)</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>52 (61%)</td>
</tr>
<tr>
<td>Proteus</td>
<td>14 (17%)</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>01 (1%)</td>
</tr>
<tr>
<td>Klebsiella</td>
<td>07 (8%)</td>
</tr>
</tbody>
</table>

**TABLE: 02**

<table>
<thead>
<tr>
<th>Organism</th>
<th>Gender (n = 85)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (29)</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>04 (14%)</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>15 (52%)</td>
</tr>
<tr>
<td>Proteus</td>
<td>06 (20%)</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>-</td>
</tr>
<tr>
<td>Klebsiella</td>
<td>04 (14%)</td>
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as compared to circumcised male
20.1% of uncircumcised males had a UTI
one of the lowest rates. Among febrile male
any group whereas circumcised males had
the clinician decide whether obtaining a urine
specimen is indicated. Among febrile males,
the probability of UTI, along with information
from various sources to arrive at a diagnosis. It is, therefore
recommending that urine culture should be performed in all suspicious subjects to
diagnose UTI.

The present study has significant strength because there is huge data and studies
available on urinary tract infection in children
but there is yet limited data and studies on
urinary tract infections in adults, therefore
the current study provide a more updated
picture of UTI prevalence in adult subjects
and further extensive studies in advanced
mode on similar and related topic should
be conducted at various health care clinics
and centers to maintain the epidemiological
data in relation to urinary tract infections.

CONCLUSION:
The most common pathogen identified in
our study was Escherichia coli (E. coli).
The frequency, clinical profile and identified
pathogens for urinary tract infection in
patients presented to tertiary care hospital,
Hyderabad is not significantly different from
that of developing and developed countries.

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