A STUDY ON PRESCRIPTION PATTERN OF ANTIBIOTICS FOR URINARY TRACT INFECTIONS IN SHIMOGA DISTRICT OF KARNATAKA

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ABSTRACT
Urinary tract infections are among the most common community acquired infections that occur in both male and female of all the age groups. Various classes of antibiotics were used to treat the UTI infections. The objective was to study the prescription pattern of antibiotics used in the treatment of urinary tract infections. The study was conducted on patients diagnosed with UTI in Shimoga district hospitals of Karnataka for a period of 4 months (Jan 2012- April 2012). The data was collected from the patients who were in the age group of 18-65 years, by studying their laboratory reports, prescriptions and oral interaction. Among 80 patients, 34 (42.5%) were males and 46 (57.5%) were females. Most of the male patients were asymptomatic 23 (67.64%), whereas females were symptomatic 33 (71.73%). The study found that gram negative species account for larger proportion of causative organisms, of which E.coli was the most predominant one 55 (68.75%). Most of the patients were prescribed with Ciprofloxacin 24 (30%), Norfloxacin 16 (20%), Cephalosporin’s 30 (37.5%) and Nitrofurantoin 10 (12.5%) commonly for pregnant women. From the study it was concluded that Fluoroquinolones and Cephalosporin’s were the most commonly prescribed drugs for the treatment of urinary tract infections.

Keywords: Urinary tract infection; E.coli; Fluoroquinolones; Cephalosporin’s.

INTRODUCTION
Urinary tract infection (UTI) is also defined as the presence of micro-organisms in the urine that cannot be accounted by contamination. The organisms have the potential to invade the tissues of the urinary tract and adjacent structures [1].

Urinary tract infection (UTI) is the second most common infectious presentation in community practice. Worldwide, about 150 million people are diagnosed with UTI each year, costing the global economy in excess of 6 billion US dollars [2]. Urinary tract infection is an extremely common condition that occurs in both male and female of all the ages. The prevalence and incidence of UTI is higher in women than in men. E.coli accounts for approx. 85% of community acquired urinary tract infections and 50% of
hospital acquired UTIs. Antibiotics used in therapy of UTI are usually able to reach high urinary concentrations, which are likely to be clinically effective \cite{3, 4}. The use of antibiotics for treatment requires thoughtful consideration of direct medical costs and antimicrobial resistance patterns, both of which increase with greater use of antibiotics.

Prescribing drugs is an important skill which needs to be continuously assessed and refined accordingly. Commonly, the prescription behavior is influenced by many factors like unethical drug promotion, lack of knowledge, direct consumer advertising and non-availability of drugs. So there is a chance of prescribing irrational drugs. The assessment of the prescription will help to know the attitude of the physicians towards their prescribing, their therapeutic knowledge upgrading need/requirement and to ensure rationality in the prescription. The rationality of the prescriptions will help the physician in selecting the most appropriate cost effective treatment \cite{5}.

No similar study has been conducted in this set-up previously. The antibiotic usage study in UTI, data will help in establishing a proper antibiotic utilization guideline and promotes the rational prescribing of medicines. Hence, the present study was taken up to study the prescription pattern of antibiotics usage for urinary tract infection patients in Shimoga district of Karnataka, India.

**EXPERIMENTAL METHODS**

This protocol was a prospective study conducted in the Shimoga district hospitals for a period of 4 months (Jan 2012- April 2012).

**Study criteria:**

1. **Inclusion criteria:**
   
   Urinary tract infection patients (i.e. both recently diagnosed and recurrent UTI patients) treated with antibiotics in the age group of 18-65 years was included in the study.

2. **Exclusion criteria:**

   Patients above 65 and below 18 years of age were excluded from the study.

**Sources of data:**

- Patient lab reports, prescriptions.
- Patient interview.

**Study procedure:**
Prescriptions and laboratory reports of the out patients were reviewed for the treatment of UTI in hospitals. Patient consent was obtained before collecting the required data.

**Determination of prescription pattern:**

Patients diagnosed with UTI were interviewed to collect the socio-demographic and therapeutic data such as drugs prescribed, doses, route of administration, duration and other data were obtained by reviewing the laboratory reports and prescriptions. The results were analyzed statistically.

**RESULTS**

A total of 80 UTI diagnosed patients prescribed with antibiotics from Shimoga district hospitals of Karnataka were taken up for the study. The study was carried out in 80 patients, female patients were 46 (57.5%) and male were 34 (42.5%) respectively. Table – 1 shows the incidence of UTI in male patients was more in age group of 50-65 years 17 (50%), followed by 35-50 years 13 (38.23%) and least in 18-35 years 4 (11.76%). From 46 female patients, majority of the patients 19 (41.30%) belongs to the age group of 18-35 years, followed by 35-50 years 16 (34.78%) and least observed in the age group of 50-65 years 11 (23.91%), whereas 8 (17.39%) patients were pregnant. On a total (both male and female) age group of 35-50 years patients were found to be highest sufferers of UTI as shown in Table-1. From 34 male patients most of them 23 (67.64%) were asymptomatic, whereas out of 46 female patients 33 (71.73%) were symptomatic.

Laboratory reports of patients showed that gram negative bacterial species such as *E.coli* accounts for the larger proportion 55 (68.75%) as a causative agent, followed by *Pseudomonas* species 7 (8.75%). Gram-positive species like *Staphylococcus saprophyticus*, *Klebsiella pneumonia* accounts for 7 (8.75%) and 4 (5%) of the patients as shown by the chart-1.

Table-2 shows that Fluoroquinolones such as Ciprofloxacin 24 (30%) and Norfloxacin 16 (20%) were the widely prescribed antibiotics fallowed by Cephalosporin’s 30 (37.5%) in which Ceftriaxone 12 (15%), Cefotaxim 7 (8.75%), Cefixime 6 (7.5%) were the predominant antibiotics. Nitrofurantoin was the other major antibiotic accounting 10 (12.5%) patients and prescribed commonly for the pregnant women.
TABLE 1: AGE WISE DISTRIBUTION OF THE PATIENTS WITH UTI

<table>
<thead>
<tr>
<th>Age in years</th>
<th>male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percentage</td>
<td>Number</td>
</tr>
<tr>
<td>18-35</td>
<td>4</td>
<td>11.76</td>
<td>19</td>
</tr>
<tr>
<td>35-50</td>
<td>13</td>
<td>38.23</td>
<td>16</td>
</tr>
<tr>
<td>50-65</td>
<td>17</td>
<td>50</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100</td>
<td>46</td>
</tr>
</tbody>
</table>

TABLE 2: ANTIBIOTICS PRESCRIBED FOR TREATING UTI

<table>
<thead>
<tr>
<th>Antibiotic prescribed</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprofloxacin</td>
<td>24</td>
<td>30</td>
</tr>
<tr>
<td>Norfloxacin</td>
<td>16</td>
<td>20</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Cefotaxim</td>
<td>7</td>
<td>8.75</td>
</tr>
<tr>
<td>Cefixime</td>
<td>6</td>
<td>7.5</td>
</tr>
<tr>
<td>Cephalexin</td>
<td>5</td>
<td>6.25</td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>10</td>
<td>12.5</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

Chart 1
Percentage distribution of most common microbial species
DISCUSSION:

The study of prescribing pattern was a component of medical audit, which seeks monitoring, evaluation in the prescribing practices to achieve rational and cost effective medical care. It is necessary to define prescribing pattern and to identify irrational prescribing habits to drive a remedial message to the prescribers [6].

The study reveals that majority of the UTI patients were females mainly due to the structural and anatomical difference such as shorter urethra. In females it commonly occurs in an anatomically normal urinary tract. Conversely, in males and children, UTI generally reveals a urinary tract lesion that must be identified by imaging [7]. Twenty nine (28.75%) of the female patients showed the incidence of UTI at the age group of 21-35 years, which are the child bearing age as well as sexually active period. During the post-menopausal period, most of the women show the chances of UTI and its symptoms [8], which has been observed in our study. Thirty six (36.25%) of the female patients in the age group 35-50 years were presented with UTI.

Most of the female patients were symptomatic with symptoms like urinary urgency, frequency, dysuria, foul smelling urine, fever, rigors, and abdominal pain. This may be due to several clinical factors including short urethra, behavioral patterns and hormonal imbalance mainly lack of estrogen in post menopausal women which is responsible for maintaining the acidity of vaginal fluid [9, 10]. The study also found the same. Seventy two (71.73%) female patients were symptomatic. During the study it was found that urinary tract obstruction, urinary stones and urinary catheters were the few risk factors adding up for the incidence and recurrence of UTI.

It was well documented that E.coli was the most predominant micro-organism (70-85%) responsible for causing UTI [3] and the very same was reported from the study. E.coli accounts for the larger proportion 55 (68.75%) as a causative agent.

The prescribing pattern of antibiotics usage study showed seven (7) antibiotics prescribed. Fluoroquinolones and Cephalosporin’s were the most commonly prescribed antibiotics for the treatment of UTI. Fluoroquinolones remains the choice among the orally administered antibiotics followed by second and third generation Cephalosporin’s. This is because they have high bacteriological and clinical cure rates as well as low rates of resistance among most common uropathogens [11-13]. Our study also observed the
same. Fluoroquinolones (50%) and Cephalosporin’s (37.5%) were the mostly prescribed antibiotics for treating UTI.

The third class of antibiotic Nitrofurantoin was commonly prescribed for pregnant women during first and second trimester. This showed that nitrofurantoin is safe and efficacious in I and II trimester. This drug is not recommended in the third trimester due to hemolytic effects. The safe use of antibiotics was observed with Cephalosporin’s like Cefixime and Cephalexin in the third trimester [14, 15].

CONCLUSION

The present study revealed that Fluoroquinolones and Cephalosporin’s were the most commonly prescribed drugs for the treatment of urinary tract infections and Nitrofurantoin relatively inexpensive drug was commonly prescribed for pregnant UTI women during first and second trimester in Shimoga district hospitals of Karnataka.

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REFERENCES


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