Diabetics are more prone for infections than their non diabetic counterparts. Susceptibility increases with longer duration and greater severity of Diabetes. Urinary tract infection (UTI) is the most important and most common form of infection in diabetic patients. Diabetic patients have been found to have five fold frequency of acute pyelonephritis at autopsy than non-diabetics. Most of the urinary tract infections in patients diabetes are relatively asymptomatic. This asymptomatic infection can lead to severe kidney damage and cause renal failure. Some of the microorganisms become more virulent in a high glucose environment. Another mechanism which can increase the prevalence of infections in diabetic patients is an increased adherence of microorganisms to diabetic compared to non diabetic cells.

AIM: To investigate Clinical spectrum of urinary tract infection (UTI) between diabetic and non-diabetic patients.

Materials and Methods: A Hospital-based Prospective study was conducted in the Department of Medicine, on Patients who visit Santhiram Medical College and General Hospital in Out Patient Department and those patients who are admitted as Inpatients for a 5 months period. Universal Sampling Technique was used for the selection of study subjects. Detailed history regarding the symptoms and signs of Urinary tract infection and history of Diabetes mellitus was taken. 120 diabetics (65 females and 55 males) and 80 non-diabetics (49 females and 31 males) admitted in Santhiram Hospital were studied randomly. All proven diabetics with postprandial (2 hr) venous glucose >200 mg/dl and fasting venous glucose > 126 mg/dl were included in the study irrespective of reason for admission. All patients with a history of diabetes and those who are on insulin injection.

RESULTS: Fever was found to be present in diabetic and non diabetic subjects and was significantly associated with the presence of UTI. The majority of the diabetics with UTI (81.6 per cent) had glycosylated haemoglobin (HbA1c) > 6.5 per cent with p < 0.02. More than 50% of patients with recurrent UTI had glycosylated Hb ≥8.0. The isolation rate of Escherichia coli (E. coli) from urine culture was higher (62.5 per cent) among diabetic patients followed by Klebsiella (12 per cent) and Enteroceccus (10 per cent).

CONCLUSION: The factors of host found to be associated with UTI are female sex, fever, presence of diabetes, poor glycemic control, and past history of UTI. No correlation was noted with age. An elevated glycosylated Hb correlates with occurrence of UTI. The number of patients with UTI who had Glyco Hb below 6.5 per cent were very small in the presence or absence of predisposing factors. A Glyco Hb >8.0% is unacceptable in patients with diabetes mellitus as it increases the chance of developing UTI and its recurrence. Escherichia coli was the most frequent uropathogen responsible for UTI and recurrent UTI in both diabetics and non-diabetics. Klebsiella and Enterococcus were the other common organisms.

KEYWORDS:

INTRODUCTION:
Diabetic patients have a higher incidence of UTI than their non diabetic counterparts with a higher severity UTI which can be a cause of complications, ranging from dysuria (pain or burning sensation during urination) to organ damage and sometimes even death due to complicated UTI (pyelonephritis). In women, premenopausal and postmenopausal periods aside with sexual activity are considered increased risk factors for developing UTI. Finally, diabetic women are prone to severe kidney damage and cause renal failure. Hence the study was conducted to compare clinical, microbiological and predisposing features of UTI in diabetics and non-diabetics.

AIMS AND OBJECTIVES:
To investigate Clinical spectrum of urinary tract infection (UTI) between diabetic and non-diabetic patients.

MATERIAL AND METHODS:
A Hospital-based Prospective study was conducted in the Department of General Medicine, Santhiram Medical College, and General Hospital for a 5 months period after taking approval from the Hospital Ethics and Research Committee.

SAMPLING TECHNIQUE AND SAMPLE SIZE:
Universal Sampling Technique was used for the selection of study subjects. Patients who visit Santhiram Medical College and General Hospital in Out Patient Department and those patients who are admitted as Inpatients. Detailed history regarding the symptoms and signs of Urinary tract infection and history of Diabetes mellitus. 120 cases during the study period were taken into study after satisfying the inclusion and exclusion Criteria.

INCLUSION CRITERIA:
1. Culture positive urinary tract infections.
2. Age > 18 years.

EXCLUSION CRITERIA
1.) Culture negative urinary tract infections.
2.) Age < 18 years.
Enterococcus were the other common organisms responsible for UTI in 67.3% and 58.5% of diabetic males & females. Escherichia coli was the most frequent uropathogen isolated.

**Table 1: Sex distribution**

<table>
<thead>
<tr>
<th></th>
<th>DM</th>
<th>NDM</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE</td>
<td>55</td>
<td>31</td>
</tr>
<tr>
<td>FEMALE</td>
<td>65</td>
<td>49</td>
</tr>
<tr>
<td>TOTAL</td>
<td>120</td>
<td>80</td>
</tr>
</tbody>
</table>

Mean age among diabetic and non-diabetic patients was 56.77±15.22 years and 56.13±16.75 years.

**Table 2: Mean Age ± SD (Years)**

<table>
<thead>
<tr>
<th></th>
<th>DM</th>
<th>NDM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>59.41±12.15</td>
<td>58.83±13.64</td>
</tr>
<tr>
<td>Female</td>
<td>54.53±17.18</td>
<td>54.42±18.37</td>
</tr>
</tbody>
</table>

Fever was found to be present in 53.3% of DM and 60% of non-diabetic subjects and was significantly associated with the presence of UTI.

**Correlation of recurrent UTI with glycomic control:**

<table>
<thead>
<tr>
<th>Glyco Hb</th>
<th>No. of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6.5</td>
<td>1</td>
<td>5.2%</td>
</tr>
<tr>
<td>6.5-8.0</td>
<td>7</td>
<td>36.7%</td>
</tr>
<tr>
<td>&gt;8.0</td>
<td>11</td>
<td>57.9%</td>
</tr>
</tbody>
</table>

In our study of diabetics with UTI majority (81.6%) had Glyco Hb > 6.5% with p <0.02. A very high proportion of patients (90.9% ) with Glyco Hb <6.5 and UTI had other underlying factors which predisposed them to UTI. Thus occurrence of UTI in diabetics seems to be related to the glycomic control in the recent past- over a period of weeks to months. Further a Glyco Hb < 6.5% was infrequently associated with UTI in the absence of other underlying predisposing factors. Tseng CC et al (2002) in their study on factors predisposing to E.Coli UTI in diabetic population have noted that a Glyco Hb >8.1% was associated with an increased risk for UTI.

In those patients of UTI with Glyco Hb < 6.5%, up to 90% had underlying predisposing factors. Thus, achieving a Glyco Hb <6.5% particularly seems to protect those diabetics who do not have an underlying predisposing factor, from UTI.

Escherichia coli was the most frequently isolated uropathogen, responsible for UTI in 67.3% and 58.5% of diabetic males & females and 58.1% & 51.1% of non-diabetic males & females. In the study conducted by Mario Bonadio et al the isolation rates of E.coli were: diabetics (males 32.5% vs females 54.1%) and non diabetics (males 31.4% vs 58.2%). The incidence of E.coli ESBL is higher in diabetics (60%). Vs non- diabetics (20%) which is almost similar to study conducted by Md. Hamzar et al in diabetics (50.6%) vs non-diabetics (9.5%). Fungal UTI among diabetic population are more common in patients with prolonged hospital stay, catheterisation and prolonged parenteral antibiotic use. In the present study three patients had UTI due to Candida. These patients had other factors predisposing to UTI and/or prolonged hospital stay.

**REFERENCES:**


