Risk Factors of UTI in Pregnant Women and the Maternal and Perinatal Outcome Attending North East Medical College and Hospital, Sylhet
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Abstract

Objective: In this study was designed to see the risk factors of UTI in pregnant women and the maternal and perinatal outcome. Methods: In this case control study, women enrolled in antenatal OPD of North East Medical College and Hospital, Sylhet, during July 2020 to December 2020, were randomly allocated into case and control group. The inclusion criteria for pregnant women during the 13th - 26th weeks of pregnancy in the case group was the positive urine cultures of bacteria (more than 10^5 colonies growth in a standard positive urine culture). The same with negative culture control group. Then parameters such as parity, sexual activity, type of delivery, and infants' birth weight were recorded in questionnaire. Results: Incidence of UTI in mid trimester pregnancy during study period was 26%. Risk factors like previous history of UTI, sexual activity and multipara were higher in case group. Highest age incidence was between 20-30 years. Predominantly patients were asymptomatic. Lower abdominal pain was a common symptom. Eshcherichia coli was commensal organism. Prevalence of bacteriuria was more in women with history of UTI earlier in pregnancy. Premature rupture of membrane was significantly higher in case group. Caesarean section was higher in the case group. According to this study, the average weight of newborns whose mothers had UTI was 2.83 kg and it was 0.44 kg lower than the newborns of healthy mothers. Conclusion: According to the conducted study, UTI in mothers is the major reason for comparatively lower birth weight of infants. Routine urine check during pregnancy is helpful in diagnosing this early and fast care. For better results, more analysis is required.

Keywords: Urinary tract infection (UTI), maternal outcome, perinatal outcome.

INTRODUCTION

Urinary tract infections (UTIs) are among the most prevalent bacterial infections in humans, both in the population and hospital. UTI has been registered among 20 percent of the pregnant women and it is the most frequent cause of admission in obstetrical wards. It is characterized as a presence, in a symptomatic patient with a concomitant pyuria of at least 100,000 organisms/mL (>5 WBCs/mL) [1, 2]. UTI is not only normal but the spectrum of clinical effect ranges from asthmatic bacteriuria (ABU) to acute pyelonephritis [3].

Three common clinical manifestations of UTIs in pregnancy are: asymptomatic bacteriuria, acute cystitis and acute pyelonephritis [4].

Women with ABU during pregnancy are more likely than women without bacteriuria to give birth to premature or baby children, and have a 20 to 30 times higher risk for developing pyelonephritis during their pregnancy. In approximately 30 percent of cases, untreated ABU can also contribute to the development of cystitis. In addition, anaemia was associated with acute pyelonephritis [5]. The neonatal death rate and Gram-negative sepsis may both be correlated with ABU [6].

Pregnancy is one of the factors which increase the risk of UTI partly because of gravitational pressure on ureters causing urinary flow stasis and the humoral and immunological changes during the normal pregnancy are also attributed too [7]. A variety of disorders are associated with an elevated incidence of UTI during infancy. The incidence of UTI varies by age, sexual activities and the occurrence of gastrointestinal disorders. In healthy women, the prevalence of bacteriuria increases with age from about...
one percent in females with 5 to 14 years of age to more than 20 percent in women at least 80 years of age [8]. Sickle cell traits, diabetes mellitus and grand multiparity have been reported; each is associated with two-fold increase in the rate of bacteriuria [9]. The prevalence is higher among individuals in lower socioeconomic classes and those with a past history of UTI [10]. There is also increase in the risk of developing UTI due to catheterization, spermicidal contraceptive usage, kidney stones, tumors and urethral strictures [8, 11]. Various microorganisms are able to invade urinary tracts and bacterial organisms, which cause this disease, include Escherichia Coli, Klebsiella pneumonia, Proteus, Acinetobacter, Saprophyticus Staphylococcus, Streptococcus Group B and Pseudomonas aeruginosa [12].

In this study our main purpose was to search out the risk factors of UTI in pregnant women and the maternal and perinatal outcome in pregnant women.

**OBJECTIVE**

**General Objective**
- To identify the risk factors of UTI in pregnant women and the maternal and perinatal outcome.

**Specific Objective**
- To evaluate causes of UTI.
- To detect organism responsible for UTI.

**METHODOLOGY**

**Type of Study:** Case control study

**Place of Study:** Sylhet Medical College and Hospital.

**Study Period:** July 2020 to December 2020

**Study Population**
- Pregnant women during the 13th - 26th weeks of pregnancy in the case group was the positive urine cultures of bacteria and pregnant women during the 13th - 26th weeks of pregnancy in the control group was the negative urine culture.

**Data Analysis**
- Statistical analysis was performed using the Statistical package for social science SPSS version 23.0. A descriptive analysis was performed for clinical features and results were presented as mean ± standard deviation for quantitative variables and numbers (percentages) for qualitative variables.

**RESULTS**
- In table-1 shows age distribution of the patients where most of the in both groups belong to 20-30 years age group 40.5% and 38.8%. The following table is given below in detail:

<table>
<thead>
<tr>
<th>Age groups</th>
<th>Case, %</th>
<th>Control, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30 years</td>
<td>40.5</td>
<td>9.5</td>
</tr>
<tr>
<td>&gt;30 years</td>
<td>38.8</td>
<td>10.2</td>
</tr>
</tbody>
</table>

In figure-1 shows parity distribution of the study group where UTI was more prevalent among birth order second and third irrespective of previous obstetric history and it was almost equal in both case and control (28 % and 29.2 %). In primi patient it was 16.1%. From three and more birth order UTI showed reduced preponderance. The following figure is given below in detail:
In figure 2 shows organisms responsible for UTI where E. coli was the commonest organism causing UTI in our study followed by pseudomonas and klebsiella. Asymptomatic bacteriuria was the most frequently encountered in case. The following figure is given below in detail:

![Fig-2: Organisms responsible for UTI](image)

In figure 3 shows mode of delivery. Caesarean section was higher in women with UTI than without caused mostly due to prematurity and fetal distress. The following is given below in detail:

![Fig-3: Mode of delivery](image)

In table 2 shows causes of UTI where while looking into etiological factors, past history of UTI before pregnancy did not play a strong role as a risk factor. On the other hand, previous history of UTI in current pregnancy was significantly higher in case group which was 22%. Sexual activity in early pregnancy also played a significant role in causing UTI. The following figure is given below in detail:

![Table-2: Causes of UTI](image)

Table 3 shows fetal outcome where preterm labour was comparatively high in case group. Birth weight of babies born to UTI mother was significant lower than their counterpart. The following table is given below in detail:

![Fig-4: Symptoms of UTI](image)
DISCUSSION

The prevalence of mid-trimester UTI was 12.30 percent less than third trimester pregnancy [13], a report at the Dhaka national medical college in 2011.

This variation is the result of an anatomically evolving genitourinary and urinary structures. In one research, the correlation of UTI with perinatal and maternal risk of negative effects, such as babies who have low birth weight, premature delivery of UTI, sometimes high blood pressure/before eclampsia, mortality, caesarean delivery and intrauterine restrictions in their development has been observed [13]. But similar similarities have not been shown in other studies. This incoherent finding may be attributable to sampling bias, environmental disparities, insufficient monitoring of confounding variables and whether the sample is focused on hospital or on the community [14].

In our study, we found that, preterm labour was comparatively high in case group. Birth weight of babies born to UTI mother was significantly lower than their counterpart. The increased occurrence of preterm labor and UTI-related delivery can result from inflammatory reactions by cytokines and prostaglandin mediators caused by uro-pathogens’ colonization of amniotic fluid. These bacteria develop the collagenase and phospholipases A and C, which serve as the precursors for the pro-contractile prostaglandins E2 and F2α [15].

In one sample, the problem for Escherichia coli (E. coli), the most prominent UTI cause organism among pregnant women, with multi-drug-resistant strains, should be dealt with in this study in order to minimize the likelihood of adverse maternal and neonatal results [16].

In our studies, we observed that E. coli, led by pseudomonas and klebsiella, was the most prevalent cause of UTI. The most common condition was asymptomatic bacteriuria. Lower abdomen pain (22.6 percent) and headache were followed (19.5 percent).

CONCLUSION

From our study we can say that, UTI in mothers is the major reason for comparatively lower birth weight of infants. Routine urine check during pregnancy is helpful in diagnosing this early and fast care. For better results, more analysis is required.

REFERENCES


Table-3: Fetal outcome

<table>
<thead>
<tr>
<th>Complications</th>
<th>Case, %</th>
<th>Control, %</th>
<th>X² test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preterm labour</td>
<td>8.9</td>
<td>4.0</td>
<td>0.090</td>
</tr>
<tr>
<td>Low birth weight</td>
<td>15.3</td>
<td>0.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>PROM</td>
<td>11.3</td>
<td>4.8</td>
<td>0.043</td>
</tr>
<tr>
<td>Fetal distress</td>
<td>28</td>
<td>17.7</td>
<td>0.019</td>
</tr>
<tr>
<td>Admission in NICU</td>
<td>16.3</td>
<td>14.52</td>
<td>0.697</td>
</tr>
</tbody>
</table>