Prevalence of Asymptomatic Bacteriuria in Pregnancy

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ABSTRACT

Objective: The present study aimed at estimating the prevalence of asymptomatic bacteriuria during pregnancy.
Patients and Methods: This descriptive cross-sectional study was conducted in pregnant women coming for antenatal checkup to IYB Headquarter Hospital Attock during March-June 2017. After taking informed consent, urine samples of 180 pregnant females were collected and subjected for culture. Growth of >1x10^5 CFU/mL was considered as significant bacteriuria. Isolates were identified using standard microbiological methods.
Results: Out of total 180 samples, 16 showed significant bacteriuria, thus prevalence was calculated to be 8.89%. Asymptomatic bacteriuria had no significant relationship with age, gravidity and trimester of pregnancy. Escherichia coli was the most common isolated bacteria (43.75%).
Conclusion: Due to high prevalence of asymptomatic bacteriuria and its associated adverse complications, urine culture should be made essential part of antenatal investigations.
Keywords: Asymptomatic bacteriuria, Pregnant women, Urine culture.

Introduction

Urinary tract infection is one of the most common infection encountered during pregnancy. It can either present with symptoms or it can be symptomless. Asymptomatic bacteriuria can be defined as presence of 10^5 or more colony forming bacteria per ml of urine in a person without any clinical findings. The prevalence of asymptomatic bacteriuria in pregnancy is reported to be 2-11% by various researches. Urine normally present in bladder is sterile due to acidic pH, high urine osmolality and high urea levels inhibiting growth of bacteria. In pregnancy there are many physiological and morphological changes that predisposes to asymptomatic bacteriuria. Combination of reduction in immunity, urinary stasis, shortening of urethra, development of glycosuria and urine reflux from bladder into ureter contributes to the development of urinary tract infection. Three common clinical manifestations of UTIs in pregnancy are: asymptomatic bacteriuria, acute cystitis and acute pyelonephritis. Different factors such as presence of adhesions, stasis produced by the gravid uterus etc. play a role in the causation of UTI. Untreated asymptomatic bacteriuria can lead to adverse maternal and fetal outcomes. Mother can suffer from...
RESULTS

Out of total 180 samples, 16 showed significant growth which indicate the frequency of 8.89%. The occurrence of asymptomatic bacteriuria in pregnant women according to the age groups is shown in Table 1.

Table 1: Association of asymptomatic bacteriuria with age, trimester and gravidity (n=180)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total number of women</th>
<th>Number of women infected</th>
<th>Percentage of women infected</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-21</td>
<td>32</td>
<td>1</td>
<td>3.125</td>
<td>0.35</td>
</tr>
<tr>
<td>22-28</td>
<td>71</td>
<td>9</td>
<td>12.676</td>
<td></td>
</tr>
<tr>
<td>29-35</td>
<td>53</td>
<td>5</td>
<td>9.43</td>
<td></td>
</tr>
<tr>
<td>36 and above</td>
<td>24</td>
<td>1</td>
<td>4.167</td>
<td></td>
</tr>
<tr>
<td>Trimester</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>65</td>
<td>4</td>
<td>6.14</td>
<td>0.35</td>
</tr>
<tr>
<td>2nd</td>
<td>54</td>
<td>4</td>
<td>7.4</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>61</td>
<td>8</td>
<td>13.11</td>
<td></td>
</tr>
<tr>
<td>Gravidity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primigravida</td>
<td>67</td>
<td>4</td>
<td>5.97</td>
<td></td>
</tr>
<tr>
<td>Multigravida</td>
<td>113</td>
<td>12</td>
<td>10.61</td>
<td>0.28</td>
</tr>
</tbody>
</table>

The frequency was most common in the women between 22-28 years of age, however, asymptomatic bacteriuria did not show any significant relationship with age. Regarding pregnancy time, highest frequency was found in third trimester, however statistically there was no significant relationship between trimester and bacteriuria. There was high frequency of infection in multigravida or more as compared to primigravidas, though no significant relationship was found between gravity and bacteriuria (table 1). The commonest isolated organism was Escherichia coli (43.75%), followed by Staphylococcus.
aureus (31.25%) (Figure 1).

Figure 1: Pattern of urinary isolates in pregnant females (n=180)

**Discussion**

Urinary tract infection should be dealt with great care both in regards to clinical and laboratory diagnosis and appropriate management. The main problem with ASB is that there are no symptoms and thus remains undiagnosed. Timely diagnosis and management can greatly help to prevent maternal and fetal complications. Our study showed the prevalence of asymptomatic bacteriuria to be 8.89% which coincides to finding of 8.2% reported by Radha S et al. Our findings are also comparable to those reported by Abdel-Aziz Elzayat M et al as 10% of their study population were diagnosed with ASB. In contrast to our study, the incidence of ASB was calculated to be 25% in Nigeria and 45.3% in benin city, Nigeria. Difference in geographical locations, ethnicity and hygienic practices might be contributing factors in difference of incidence of ASB from one place to another. The act of ablation performed by muslims after micturation and defecation may have protective role against asymptomatic bacteriuria. Our study showed increased prevalence of infection in women belonging to age groups of 22-28 years (12.676%) followed by 29-35yrs (9.43%) and least in age group of 15-21 years. However, no statistical association of SB was found with age. Similar pattern was observed in other studies. This could be due the fact that women belonging to this age group are sexually active and use contraceptive methods. In contrast Hazir showed increased incidence in younger age group (less than 20) with maternal age significantly lower in cases with asymptomatic bacteriuria. A study conducted in southern Ethiopia showed highest rate of ASB in the age group ≥ 35 years and the lowest was in the age group of 25–34 years. Our study showed an increased prevalence of infection with increasing gestational age and it was more frequently observed in the third trimester of pregnancy (13.1%). The lowest frequency was observed in the first trimester of pregnancy, (6.1%). This is in agreement with Tugrul S and Parveen who reported an increased frequency of urinary tract infection in the third trimester compared to the first and second trimester of pregnancy. However, this report does not agree with Abdel-Aziz Elzayat M et al, and Onuh et al who reported a higher prevalence of urinary tract infection in the second trimester compared to the third trimester. Other studies suggest that the incidence and the risk of acquiring bacteriuria enhances along with the progression of pregnancy from 0.8% at the end of first trimester to 2% at the end of pregnancy. Multigravidas women had the highest frequency of asymptomatic bacteriuria affecting 9.73 % of the total number of multigravida included in the study. The higher incidence of ASB in multigravida showed positive correlation with the studies by Obirikorang C. The descent of pelvic organs associated with multiple pregnancies leads to the widening of the urethral orifice thus making ascend of microorganisms easier. These changes differ from patient to patient and are more likely to occur in women who have less gap in pregnancies. The most common uropathological isolate found in our study was Escherichia coli (43.75 %). Similar result was reported by Gayathree et.al and Ade-Ojo IP. The dominance of Escherichia coli reported in one was as high as 86 %. The second most prevalent pathogen found in our study was S. aureus (31.25 %). This result corresponds with finding of Irade et al and Samuel S et al. In contrast a study conducted in Kanu showed Klebsiella and Staphylococcus saprophyticus to be most common uropathogen. Thus there is difference in dominance of uropathological organisms responsible for ASB from place to place, highlighting the importance of urine culture help to identify exact causative organism.
Our study showed prevalence of ASB to be 8.89%, which is quite high. There was no significant relationship with age, parity and trimester. Escherichia coli was found to be most dominant uropathogen. To safeguard maternal and fetal health, urine culture should be recommended to all pregnant ladies so that appropriate management can be initiated timely.

### References