

Asymptomatic Bacteriuria in Pregnant Women

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Objective: Asymptomatic bacteriuria could lead to serious complications in pregnant women if untreated. The aim of this study is to evaluate the prevalence of asymptomatic bacteriuria in pregnant women attending antenatal clinic.

Setting: Antenatal Clinic at King Abdulaziz University hospital, Saudi Arabia.

Design: Retrospective Descriptive Cross-Sectional Hospital-Based Study.

Method: Nine hundred eighty-seven pregnant women in the second trimester were included in this study, from January 2008 to December 2010. All patients had no signs and symptoms of urinary tract infection (UTI). Clean catch midstream urine sample was collected from each patient into sterile universal container. The urine samples were examined microscopically and then cultured. Identification of isolates was by standard microbiological technique.

Result: Three hundred forty-seven had significant bacteriuria, a prevalence rate of 35.2%. The highest age-specific prevalence was found in the 26-30 years, 113 (11.4%) and the lowest in the 46-48 years, 3 (0.3%). *Streptococcus agalactia* was the most predominant organism closely followed by *Escherichia coli*.

Conclusion: The study revealed that the prevalence of asymptomatic bacteriuria in pregnant women was 35.2%. The predominant organisms were *Streptococcus agalactia* and *E. coli*. Routine urine cultural test should be performed on all antenatal patients to identify unsuspected infection.

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Urinary tract infection (UTI) is the most common bacterial infection during pregnancy^{1,2}. The incidence of UTI varies, depending on the local prevalence of asymptomatic bacteriuria, whether it is treatable or not. Asymptomatic bacteriuria (ASB) is a major risk factor for the development of urinary tract infections (UTIs) during pregnancy³.

Asymptomatic bacteriuria refers to the presence of bacteria in urine; it is a condition in which urine culture reveals a significant growth of pathogens that is greater than 10^5 bacteria/ml, but without the patient showing symptoms of urinary tract infection (UTI)⁴. Pregnancy enhances the progression from asymptomatic to symptomatic bacteriuria, which could lead to pyelonephritis and adverse obstetric outcomes such as prematurity, low-birth weight and higher fetal mortality rates⁵⁻⁷.

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Although UTI may not always lead to complications in the mother, it is still a cause of significant morbidity⁸. The apparent reduction in immunity of pregnant women appears to encourage the growth of both commensal and non-commensal microorganisms⁹. The physiological increase in plasma volume during pregnancy decrease urine concentration and up to 70% pregnant women develop glucosuria, which encourages bacterial growth in the urine^{10,11}.

To prevent mother and child from any form of complication that may arise due to infection, it has been suggested to do routine culture screening for all pregnant women attending antenatal clinic even in the absence of UTI symptoms¹².

It has been advised to treat bacteriuria with a course of antibiotic 3-7 days, which would reduce the risk of symptomatic UTI by 80 to 90%^{5,7}. The association between bacteriuria and pyuria has been reported^{13,14}.

The aim of this study is to evaluate the prevalence of asymptomatic bacteriuria in pregnant women attending antenatal clinic.

METHOD

Nine hundred eighty-seven pregnant women in the second trimester were included in this study for routine prenatal screening of urine and culture tests, from January 2008 to December 2010. The age, nationality and gravidity were documented. Patients who had signs and symptoms of UTI or antibiotic usage within one week were excluded.

A quantitative urine culture was obtained with blood and MacConkey agar plate. Significant growth means the presence of > 100,000 organisms/ml urine of a single bacterium, while heavy mixed growth means the presence of > 100,000 organisms/ml urine of more than one type of bacteria.

Statistical analysis was performed by the chi-square (χ^2) test and t-test for continuous variables. A P-value of < 0.05 was considered statistically significant.

RESULT

Three hundred forty-seven samples were positive for significant bacteriuria, a prevalence of 35.2%. Table 1 shows the age distribution among the women studied. The highest rate of 11.4% was found in the age group of 26-30 years and the lowest rate of 0.3% was found in the age group of 46-48 years.

Table 1: Prevalence Rate and Age Group

Age	Number Examined	Patients with Bacteriuria	Age Specific Prevalence
15 - 20	69	22	2.2
21 - 25	252	82	8.3
26 - 30	303	113	11.4
31 - 35	208	71	7.2
36 - 40	114	42	4.3
41 - 45	38	14	1.4
46 - 48	3	3	0.3
Total	987	347	35.2

The bacterial isolates are shown in Table 2. The dominant bacteria were *Streptococcus agalactia* 23 (6.62%) and *E. coli* 11 (3.17%). The other isolates were *Enterococcus faecalis*, *Klebsiella pneumonia*, *Candida albicans* and *Acinetobacter*.

Table 2: Bacterial Isolates among Pregnant Women with Significant Bacteriuria

Bacteria Isolated	Number of Women
<i>Streptococcus agalactia</i>	23
<i>Escherichia coli</i>	11
<i>Enterococcus faecalis</i>	4
<i>Klebsiella pneumonia</i>	4
<i>Candida albicans</i>	2
<i>Acinetobacter</i>	1
Others	9
Total	54

DISCUSSION

In this study, bacteriuria prevalence rate of 35.2% was found; it is higher than reported in Nigeria (23.9%), Ghana (7.3%), Ethiopia (7%) and Canada (4-7%)¹⁵⁻¹⁷. It is lower than 86.6% reported earlier from Benin City, Nigeria and 78.7% reported in Abakaliki, Nigeria^{18,19}.

No relationship between prevalence of asymptomatic bacteriuria and patients' age was found ($P = 0.17$). Prevalence of 11.4% was recorded in the age group 26-30 years and 0.3% among the 46-48 age group; it is similar to the findings of other studies^{17,19}. Advanced maternal age (≥ 35 years) was reported to be a risk factor for asymptomatic bacteriuria in pregnancy²⁰.

In this study, the most common organism was *Streptococcus agalactia*, 23 (2.3%). Other studies found that *E. coli* and *Staph aureus* were the most common organisms¹⁷⁻¹⁹. An increasing trend in the prevalence of *Staphylococcus aureus* infection was found among asymptomatic pregnant women^{21,22}.

The other organisms isolated were *E. coli*, *Enterococcus faecalis*, *Klebsiella pneumonia*, *Candida albicans* and *Acinetobacter*; these organisms cause UTI less commonly²¹. It was found that most of the infected patients were in their first and early second trimesters; this could be explained that most pregnant women in our area report to antenatal clinic during these periods.

CONCLUSION

This study revealed 35.2% prevalence of asymptomatic bacteriuria among pregnant women. This is worrisome because UTI in pregnancy may have serious consequences for both the mother and the child. The most predominant organisms were *Streptococcus agalactia* and *Escherichia coli*.

Potential Conflicts of Interest: No

Competing Interest: None, **Sponsorship:** None

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