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Asymptomatic bacteriuria in pregnancy and its outcome

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Abstract

Introduction: Asymptomatic bacteriuria is one of the most difficult to diagnose common infection in pregnancy and persist through the term. This increases in prevalence with age and sexual activity.

Aim: To identify asymptomatic bacteriuria in pregnancy and its outcomes.

Methodology: A prospective observational study conducted in Terry care hospital with 180 participants meeting the inclusion criteria attending the antenatal OPD and were enrolled in the study at the first trimester.

Results: The study population's average age was 24.57 ± 3.94 . At delivery, the mean gestation was 35.34 ± 3.45 months. 55% of the participants delivered their babies on time. Sixty-three percent of the participants received care via the LSCS method. The percentage of participants having preeclampsia was approximately 34.08%. The average birth weight of the foetus was 3.48 ± 0.46 .

96.11% of the individuals gave birth to babies who were of normal birth weight. A reported 24.02% of individuals had NICU admissions. In 14.44% of the subjects, asymptomatic bacteriuria was found. 53.85% of the subjects reported having asymptomatic bacteriuria during the third trimester. *E. coli* was found in 7.22% of the samples.

Conclusion: Through the present study complications and the obstetric outcome associated with the asymptomatic bacteriuria are concluded.

Keywords: Bacteriuria, pregnancy, antenatal OPD

Introduction

One of the most commonly occurring nosocomial infections that helps patients seek medical attention is urinary tract infection (UTI). It affects all age group, but women, pregnant women are more vulnerable than men due shorter urethra, pregnancy, easy contamination of urinary tract with feral flora and various other reasons ^[1, 2].

There is a lot of morphological and physiological changes that take place in the genitourinary tract during pregnancy that contributes in UTI. It is 2 types, symptomatic and asymptomatic. Asymptomatic bacteriuria (ASB) is defined as presence bacteria in a non-contaminated urine specimen of a patient without any symptoms and signs of urinary origin ^[1].

ASB is common in women and increases with age along with contributing factor such as sexual activity. The prevalence of ASB in pregnancy varies from 4-7% (range 2-11%) and similar to observed non-pregnant women ^[3, 4]. There is 20-30 fold increase in risk of developing pyelonephritis during pregnancy with ASB when compared with women without bacteriuria ^[5]. This leads to delivery of premature delivery and having infants of low birth weight ^[5].

Escherichia coli is the most common causative agent in ASB, but in pregnancy it is found that *Streptococcus agalactiae*, with a low-count bacteriuria, leading to adverse obstetric outcomes. Acute upper urinary tract infection or pyelonephritis is predisposed in pregnant women ^[6, 7]. There is a risk of 2.2%, 69.8% and 28% in 1st, 2nd and 3rd trimester respectively, and if left untreated can lead to development of acute pyelonephritis in around 30-50% women with ASB. ^[8]

Radha *et al.*, conducted a cross sectional study maternal and fetal morbidity in women with ASB are identified and was found that most common cause of morbidities were pre-term labour, pre-eclampsia and prematurity ^[9].

According to the IDSA recommendation, a woman's diagnosis of asymptomatic bacteriuria may only be verified if the same species is found in amounts of at least 100,000 CFUs per millilitre of pee in at least two consecutive voided specimens.

If left untreated, bacteriuria can have major consequences for both the mother and the foetus, including endometritis, hypertension, anaemia, amnionitis, and early birth, low birth weight, and

perinatal mortality [1, 10]. The presence of type 1 fimbriae can trigger an immunological or inflammatory response since they are immunogenic. It causes the symptoms to appear. The asymptomatic clinical condition of asymptomatic bacteriuria is caused by the lack of Type 1 fimbriae, which are present in some bacterial strains, most notably *E. coli* [11].

Due to insufficient data, this study aims to find out the prevalence of asymptomatic bacteriuria among pregnant women in our population and to establish the common organisms from and their antimicrobial susceptibility. Another objective, is to study the complications and obstetric outcomes in these women.

Methodology

This is a prospective observational study conducted in a tertiary care hospital, from September 2018-April 2020 in the antenatal OPD with a population size of 180. All the pregnant woman visiting the antenatal clinic was included in the study after fulfilling the criteria of consenting to the study and follow up period. Patients with symptoms and signs of urinary tract infection, history of antibiotic therapy taken in previous weeks, pyrexia of unknown origin, known case of renal disease and congenital anomalies of urinary tract were excluded from the study.

After ethical committee clearance from the institute, an informed consent was taken involving all the risks benefits and voluntary nature of participation of study. The parameters were documented in a structured study performa. History of socio-demographic details, present and past obstetric/ menstrual, past and personal history along with family history were taken down along with a general physical examination followed by obstetric examination. A urine culture and sensitivity of all patients meeting the inclusion criteria were done in the 1st trimester and was tested for amikacin, gentamicin, ciprofloxacin, ceftriaxone, ceftazidime, nitrofurantoin, cefoperazone/ sulbactam, meropenem and fosfomycin. This was repeated in 2nd and 3rd trimester with similar manner of testing and in case of contamination were advised to repeat and culture and were treated if required. All women were treated for ASb and a repeat urine culture was performed after completion go treatment for clearance bacteriuria. They were assessed for obstetrical outcomes like UTI, maternal anemia, preeclampsia, prematurity, low birth weight, and fetal mortality throughout the study period.

Asymptomatic bacteriuria was considered as the primary outcome variable. Age, Mode of delivery and other clinical parameters were considered to study relevant variables.

Descriptive analysis: Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables. Data was also represented using appropriate diagrams like a bar diagram, pie diagram and box plots. IBM SPSS version 22 was used for statistical analysis.

Results

180 participants were included in the study and mean age of 24.57±3.94 in the study population and ranged between was 18.00 to 39.00 years. Of the participants in the study, 84 (46.67%) were between 21 and 25 years old, 59 (32.78%) were between 26 and 30 years old, of the participants in the research, 77 (43.22%) had a live birth, a previous LSCS, or a term prior obstetric history result. 93.33% of population had a normal family history while the remains 6.67% had no significant family history. In the study, the mean gestation at delivery was 35.34±3.45.

varied from 20.00 to 41.00 years old.

99 (55%) of the study population's participants were term delivery, while 81 (45%) were preterm. 114(63.33%) participants went with LSCS mode of delivery, 7(3.89%) participants went with low forceps delivery, 53(29.44%) participants went with spontaneous vaginal delivery, and 6(3.33%) participants went with ventouse delivery. 26(14.44%) participants had ASB and the remaining did not have.

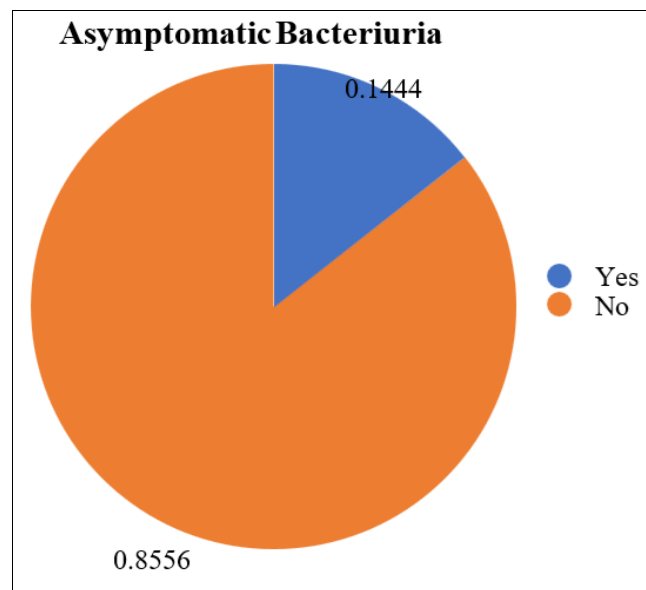


Fig 1: Bar chart of asymptomatic bacteriuria in the study population (N=180)

Table 1: Descriptive analysis of organisms in the study population (N=180)

Organisms	Frequency	Percentages
<i>E. coli</i>	13	7.22%
Staphylococcus	8	4.44%
Klebsiellaoxytoca	5	2.78%
No growth	154	85.56%

13(7.22%) people had *E. coli*, 8(4.44%) and 5(2.78%) people had staphylococcus and klebsiellaoxytoca.

The antibiotics prescribed in the study population were Amoxicillin clavulnic acid 500 mg b, Amoxycillinclavulnic acid tid 3 days, Ampicillin 500 mg poqid 3 days, Ceftriaxone 1 gm iv bd 5 days, and Cephalexin 500 mg poqid for 3 days, with respective percentages of 46.15%, 15.38%, 7.69%, 3.85%, and 7.69%.

The mean fetal birth weight was 3.48±0.46in the study population. Ranged between was 1.02 g to 4.34. Among the study population, 7(3.89%) participants were delivered low birth babies, and 173(96.11%) participants were delivered, normal birthweight babies. Among the study population, 11(6.11%) participants were 1 APGR score, and 169(93.89%) participants were APGR score 2.

Among the study population, 43(24.02%) people reported NICU admission.

Discussion

Pregnancy-related infections typically show no symptoms, ASB is difficult to diagnose and can persist throughout pregnancy. The prevalence of asymptomatic bacteriuria rises with age and/or sexual activity. Asymptomatic bacteriuria in pregnancy might occur in 4-7% of cases. Pregnant women should be

screened for bacteriuria due to the relatively high prevalence of asymptomatic cases, the negative effects on the pregnancy, and the possibility of avoiding sequelae with appropriate care. The goal of the current investigation was to define asymptomatic bacteriuria in pregnancy and its consequences. The final analysis includes 180 participants in total.

Under socio-demographic parameters, a mean age of the participants were found to be 24.57 ± 3.94 . This study resembles Khattar *et al.*,^[12] which was a prospective study with a sample of 290 women who had a mean age of 25.33 ± 5.81 .

In the current study, 15% of participants were under the age of 20, 46.67% were between the ages of 21 and 25, 32.78% were between the ages of 26 and 30, and 5.56% were above the age of 30. In contrast with our findings, Izuchukwu KE *et al.*^[13] did a prospective cohort study with 220 individuals in which 1.54% were under the age of 20, 7.69% were between the ages of 20 and 24, 35.38% were between the ages of 25 and 29, 40% were between the ages of 30 and 34, and 15.38% were above the age of 35.

42.77% of the participants in the current survey were illiterate, 30.56% had a diploma, 13.89% had graduated, and 5% had not completed their education. Izuchukwu KE *et al.*^[13] conducted a prospective cohort study with 220 participants, finding that 55.38% of them had completed secondary education. Primary and tertiary education followed with 26.15% and 18.46% of participants, respectively. In a hospital-based cross-sectional study involving 358 pregnant women, Ali IE *et al.* (42.8%) found that the majority of participants had completed secondary education

(28.8%), with higher education, primary education, illiteracy, and literate education following at 28.5%, 24.9%, 13.4%, and 4.5%, respectively. Depending on the socioeconomic standing of the study group, the percentage of the educational status may change. The majority of participants in the current study (45.56%) were from lower-middle socioeconomic position, followed by upper-middle, upper and lower socioeconomic status (33.89%, 13.33%, and 7.22%, respectively). In a prospective cohort study with 220 participants, Izuchukwu KE *et al.*^[13] found that the majority of participants belonged to the middle class, with the lower and upper classes coming in second and third, with 23.07% and 12.30%, respectively.

Anaemia and abnormal blood pressure were noted in the study population with 2.22% and 1.11%, respectively, in the current investigation. In a prospective research including 300 pregnant women, V. P., B. K. *et al.*,^[14] found that anaemia and hypertension affected 9.6% and 11.25% of the participants, respectively. These findings were higher than those found in our study. The past obstetric history observed with 40.78%, 43.02%, and 8.94% were Live birth/Previous LSCS/Term, Live birth/Previous Normal delivery/Term, Live birth/Preterm/ND, and Spontaneous Abortion. 3.35% and 3.91%, in that order.

The mean gestation at delivery for the study population was 35.34 ± 3.45 in this investigation. The majority of participants in this study delivered their babies on time (55%), with preterm deliveries accounting for 45% of all births. Compared to the findings of our investigation, a prospective study by V. P., B. K., *et al.*^[14] in 300 pregnant women revealed a lower percentage of preterm delivery (23.5%). The current study found that 63.33% of participants underwent LSCS mode of birth, with the other participants undergoing spontaneous vaginal delivery, low forceps delivery, and ventouse delivery, at rates of 29.44%, 3.89%, and 3.33%, respectively. In a cross-sectional study conducted over a 12-month period on 400 women, Radha S *et al.*,^[9] found that 19.85% of cases had CS and 80.15% of cases had vaginal deliveries, which was incompatible with the findings

of our study.

In the present investigation, 14.44% of the subjects had asymptomatic bacteriuria. In a prospective study including 300 pregnant women, V. P., B. K., *et al.*^[14] found that 11.33% of the study population had ASB. In a different cross-sectional study including 400 women, asymptomatic bacteriuria was noted in 8.25% of the subjects by Radha S. *et al.*^[9] According to the findings of our investigation, both studies revealed a lower prevalence of asymptomatic bacteriuria.

11.54% of the participants in the current study reported asymptomatic bacteriuria in the first trimester, compared to 34.62% and 53.85% in the second and third trimesters. A prospective study by V. P., B. K. *et al.*^[14] included 300 pregnant women. Of the participants, 14.7% reported having asymptomatic bacteriuria in the first trimester, compared to 64.7% and 20.6% in the second and third trimesters, respectively. The results of both investigations showed that in the second and third trimesters of pregnancy, asymptomatic bacteriuria is very common.

In the current investigation, *E. coli* was found in 7.22% of the cases, followed by *Klebsiella oxytoca* (2.78%) and *staphylococcus* (4.44%). In a prospective investigation including 300 pregnant women, V. P., B. K., *et al.*,^[14] found that *E. coli* was present in 20.58% of the cases. *E. coli* was the most often found species in the sample population in both investigations.

APGAR scores 1 and 2 were observed in the current study with 6.11% and 93.89%, respectively. In a study involving 500 pregnant mothers, Byna P *et al.*^[16] found that 25% of the participants had low APGAR scores.

24.02% of participants in the current study reported being admitted to a NICU. However, a research by Byna P. *et al.*^[16] among 500 pregnant women revealed a higher proportion, with 40% of them reporting NICU admission.

Conclusion

In pregnancy, asymptomatic bacteriuria is more common. Its identification and treatment are crucial since, in the absence of therapy, instances may worsen and cause symptoms that could compromise the health of the foetus and mother.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Enayat K, Fariba F, Bahram N. Asymptomatic bacteriuria among pregnant women referred to outpatient clinics in Sanandaj, Iran. *International Brazilian Journal of Urology*. 2008;34(6):699-704; discussion 704-7.
2. Smail F. Asymptomatic bacteriuria in pregnancy. *Best Practice & Research Clinical Obstetrics & Gynaecology*. 2007;21(3):439-50.
3. Girishbabu RJ, Ramesh ST. Asymptomatic bacteriuria in pregnancy. *International Journal of Biological & Medical Research*. 2011;2(3):740-2.
4. Nicolle LE. Screening for asymptomatic bacteriuria in pregnancy. In: Nicolle LE, editor. *Canadian Guide to Clinical Preventive Health Care*. Ottawa: Health Canada; 1994. p. 100-6.
5. Nicolle LE, Bradley S, Colgan R, Rice JC, Schaeffer A, Hooton TM, *et al.* Infectious Diseases Society of America guidelines for the diagnosis and treatment of asymptomatic bacteriuria in adults. *Clinical Infectious Diseases*.

- 2005;40(5):643-54.
6. Gilstrap LC 3rd, Ramin SM. Urinary tract infections during pregnancy. *Obstetrics and Gynecology Clinics of North America*. 2001;28(3):581-91.
 7. Mukherjee K, Golia S, CL V, Babita, Bhattacharjee D, Chakroborti G. A study on asymptomatic bacteriuria in pregnancy: prevalence, etiology and comparison of screening methods. *International Journal of Research in Medical Sciences*. 2017;2(3):7.
 8. Nkwabong E, Etape M, Nelson FJ. Outcome of pregnancy complicated by asymptomatic bacteriuria. *Gynecology & Obstetrics (Sunnyvale)*. 2014;4(12):12.
 9. Radha S, Nambisan B, Prabhakaran NK, Jamal S. Prevalence and outcome of asymptomatic bacteriuria in early pregnancy. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 2016;6(1):223-7.
 10. Kiningham RB. Asymptomatic bacteriuria in pregnancy. *American Family Physician*. 1993;47(5):1232-8.
 11. Graham JC, Leathart JB, Keegan SJ, Pearson J, Bint A, Gally DL. Analysis of *Escherichia coli* strains causing bacteriuria during pregnancy: selection for strains that do not express type 1 fimbriae. *Infection and Immunity*. 2001;69(2):794-9.
 12. Khattak AM, Khattak S, Khan H, Ashiq B, Mohammad D, Rafiq M. Prevalence of asymptomatic bacteriuria in pregnant women. *Pakistan Journal of Medical Sciences*. 2006;22(2):162.
 13. Izuchukwu KE, Oranu EO, Bassey G, Orazulike NC. Maternofetal outcome of asymptomatic bacteriuria among pregnant women in a Nigerian Teaching Hospital. *Pan African Medical Journal*. 2017;27:69.
 14. P V, B K, G KM, Dkv P. Prevalence of asymptomatic bacteriuria among antenatal women and its effects on maternal and perinatal outcome in northern Andhra Pradesh population. *International Journal of Advances in Medicine*. 2018;5(1):179-85.
 15. Nteziyaremye J, Iramiot SJ, Nekaka R, Musaba MW, Wandabwa J, Kisegerwa E, *et al*. Asymptomatic bacteriuria among pregnant women attending antenatal care at Mbale Hospital, Eastern Uganda. *PLoS One*. 2020;15(3).
 16. Byna P, Muvva N, Kolli S, Shaik MV. A study of risk factors and consequences of asymptomatic bacteriuria in pregnant women and feto-maternal outcome. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 2015;4(5):1300-5.

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