



PREVALENCE OF ASYMPTOMATIC BACTERURIA IN PREGNANCY AND ITS RELATION TO MATERNAL AND PERINATAL OUTCOME

Dr Swati Katiyar	Junior Resident Department of Obst and Gynae MLN Medical College, Prayagraj, Uttar Pradesh, India.
Dr Veena Gupta*	Professor Department of Obs and Gynae MLN Medical College Prayagraj, Uttar Pradesh India. *Corresponding Author
Dr Saumya Saxena	Lecturer Department of Obs and Gynae MLN Medical College Prayagraj, Uttar Pradesh India.
Dr Reena Sachan	Assistant Professor Department of Obs and Gynae MLN Medical College Prayagraj, Uttar Pradesh, India.

ABSTRACT **Introduction:** Asymptomatic bacteriuria is defined as the presence of significant bacteriuria without the symptoms of an acute urinary tract infection. Pregnant women with ASB are more likely to develop acute pyelonephritis in later pregnancy, postpartum urinary tract infection, hypertensive disease of pregnancy, anaemia, chronic renal failure, prematurity, low birth weight babies and prenatal death if untreated. The incidence of these can be reduced by treating ASB during pregnancy.

Aim: To find out the prevalence of asymptomatic bacteriuria in pregnancy and the relation of various adverse pregnancy outcomes with asymptomatic bacteriuria

Method: Approximate 30 ml of clean catch midstream urine samples were obtained from 150 pregnant women attending the Obstetric Outpatient Department. Samples were processed as per standard guidelines.

Result: Prevalence rate of Asymptomatic bacteriuria was 17.33%. Common pathogen was E.coli occurring in 61.53% of the patients, Klebsiella in 26.92% and the other were staphylococcus and enterococcus. Significant maternal outcome noted were presence of preterm pain in 23.07% and preterm labour in 19.23% patients of ASB positive group, which is statistically significant compared to ASB negative group. Maternal anemia was present in 23.07% and hypertension was seen in only 11.52% patients and not associated with asymptomatic bacteriuria. Significant neonatal outcomes were prematurity and low birth weight and IUGR. Preterm birth was present in 19.23% of the patients in ASB positive group and low birth weight in 23.07% and IUGR in 15.38%.

Conclusion: The present study showed high occurrence of ASB in pregnant women. It also demonstrated that if disease was detected late in pregnancy it might lead to various maternal and neonatal complications despite treatment of infection.

KEYWORDS :

INTRODUCTION

Urinary tract infections represent the most common bacterial infection in pregnancy. UTI may be asymptomatic (subclinical infection) or symptomatic (disease). Thus, the term urinary tract infection encompasses a variety of clinical entities, including asymptomatic bacteriuria (ASB), cystitis and pyelonephritis. Pregnancy is a unique state with anatomic and physiologic urinary tract changes. While asymptomatic bacteriuria in non-pregnant women is generally benign, pregnant women with bacteriuria have an increased susceptibility to pyelonephritis. The renal pelvis and ureters begin to dilate as early as the eighth week of pregnancy and the bladder itself is displaced superiorly and anteriorly. Smooth muscle relaxation induced by progesterone results in decreased peristalsis of the ureters, increased bladder capacity and urinary stasis. Differences in urine pH and osmolality and pregnancy-induced glycosuria and aminoaciduria may facilitate bacterial growth [1] Studies have shown that the frequency of asymptomatic bacteriuria in pregnancy ranges between 2%-18.5%.

ASB is one of the commonest infective sequels in the course of pregnancy and has an increased risk of emerging into symptomatic urinary infection or recurrent asymptomatic bacteriuria during the course of pregnancy. The serious maternal complications like pyelonephritis, pre-eclampsia, shock and even death and foetal outcomes like preterm birth, low birth weight, still-borne infants etc., following asymptomatic bacteriuria, makes it necessary for the early diagnosis and prompt management

MATERIALS AND METHODS

Place of study: MLN medical college and SRN Hospital, Prayagraj

Duration of study: One year

Type of study: Cross sectional study

Sample size: 150

Sample collection method:

Clean catch method: 30ml of clean catch mid stream urine sample collected in a sterile bottle for urine culture and also for quantitative and microscopic examination.

Inclusion criteria:

Pregnant women of all gestational age attending antenatal clinic.

Exclusion Criteria:

- 1) Women with present history of UTI or any clinical presentation of UTI (frequency of micturition, burning micturition, loin pain, etc) in the present pregnancy or in the past 1 yr.
- 2) Women having renal stones or urinary tract anomalies.
- 3) Women known to be diabetic, chronic hypertensive.
- 4) Women already on any antibiotic therapy in the past 1 month.

PROCEDURE

Urine culture was done for quantitative bacterial count. Calibrated loop direct streak method was used. In this method a flame sterilised and cooled 4 mm platinum loop, delivering 0.01 ml of urine is used. One biconvex loop full of well mixed uncentrifuged urine specimen was deposited on blood agar plate and Mac conkeys agar plate. Both plates were incubated overnight at 35°C and read next morning. Colonies were examined and total counts were estimated from both plates. In each case colonies were multiplied by 100 to give an estimate of the number of colonies per millilitre of urine. 10⁵ colonies per ml were taken as significant bacteriuria. After determining the plate count, organisms were identified and susceptibility to antibiotics was determined by Disc-Diffusion method. Mixed growth of two or more organisms was considered as contamination and the sample was repeated.

After screening, women with bacteriuria were treated with 14 days course of antimicrobial drugs as per the sensitivity of the organisms. Repeat cultures were obtained 2 weeks after completion of the therapy. If culture was sterile, periodic repeat cultures were done at 4 weeks interval till culture was sterile. All the patients in both groups were followed up till delivery for any evidence of complications like preeclampsia, anemia, preterm labour, fetal growth restriction. Newborns were assessed for prematurity, birth weight and APGAR scores

Statistical Analysis-

The unpaired 't' test or chi-square test was carried out for continuous

and categorical variables respectively and descriptive statistics were given as the mean SD. For all statistical analysis $p < 0.05$ was considered as significant.

RESULTS:

Patients were divided into two groups on the basis of the result of urine culture test.

Group A- pregnant women positive for asymptomatic bacteriuria.

Group B- pregnant women negative for asymptomatic bacteriuria.

Table-1: Distribution of Patients and Prevalence

	Asymptomatic bacteriuria		Prevalence
Group A	Positive	26	17.33%
Group B	Negative	124	
		Total = 150	

In the present study prevalence of asymptomatic bacteriuria in pregnancy was 17.33%.

Table 2: Age distribution

Age in years	Group A		Group B	
	No	%	No	%
18-20	2	7.6%	8	6.4%
21-25	12	46.1%	50	40.3%
26-30	9	34.6%	44	35.4%
31-35	3	11.5%	22	17.7%
Total	26		124	
Mean \pm SD	25.73 \pm 3.95		26.34 \pm 3.74	

Maximum number of patients 46.1% in group A and 40.3% in group B were in the age group 21-25 years and minimum number of patients 7.6% in group A and 6.4% in group B were in the age group 18-20 years.

Table 3: Gestational Age at the time of diagnosis

Period of Gestation	Group A		Group B	
	No	%	No	%
1 st Trimester (1-12 wk)	3	11.53%	14	11.29%
2 nd Trimester (13- 28 wk)	15	57.69%	81	65.32%
3 rd Trimester (29- 40 wk)	8	30.76%	29	23.38%
Total	26		124	
Mean \pm SD	25.80 \pm 7.9		24.51 \pm 7.91	

Mean gestational age at which women presented in group A was 25.80 \pm 7.9. Mean gestational age of group B was 24.51 \pm 7.91. Maximum number of patients in both groups belonged to 2nd trimester. The P value equals to 0.199, that is statistically not significant.

Table-4: Maternal Outcome

Outcome	Group A		Group B		P value
	No	%	No	%	
Preterm pain	6	23.07%	9	7.25%	0.001
Preterm Labour	5	19.23%	7	5.64%	0.001
Hypertension	3	11.53%	8	6.89%	0.066
Anemia	6	23.07%	22	21.56%	0.71
Pyelonephritis	0	0%	0	0%	

Table 5: Perinatal Outcome

Outcome	Group A		Group B		P value
	No	%	No	%	
Preterm birth(<37Wks)	5	19.23%	7	5.64%	0.001
Low birth weight(<2.5kg)	6	23.07%	10	8.06%	0.001
Preterm Low birth weight	5	19.23%	6	4.83%	0.001
IUGR	4	15.38%	7	5.64%	0.001
Perinatal Death	1	3.8%	4	3.22%	0.73

DISCUSSION

Urine culture and sensitivity was done in all the patients and the dominant isolates were Escherichia coli occurring in 61.53% followed by Klebsiella 26.92% others were staphylococcus, and enterococcus.

Significant maternal outcome noted were presence of preterm pain in 23.07% and preterm labour in 19.23% in group A, which is statistically

significant compared to group B.

Maternal anemia was present in 23.07% and hypertension was seen in only 11.52% patients in the group A and is not associated with asymptomatic bacteriuria and none of the patients in this study developed pyelonephritis.

Significant neonatal outcomes were prematurity and low birth weight and IUGR. Preterm birth was present in 19.23% of the patients in the group A and low birth weight in 23.07% and IUGR in 15.38%, which is statistically significant compared to group B.

Fetal mortality was observed in 3.8% cases of group A and 3.22% cases of group B and cause of the death was prematurity in group A, statistically not significant when compared to group B. (P value 0.73)

CONCLUSION

In this study, out of 150 randomly selected pregnant women, 26 were found to have asymptomatic bacteriuria which gives a prevalence rate of 17.33%. Urine culture and sensitivity was done in all the patients and the dominant isolates were Escherichia coli occurring in 61.53% followed by Klebsiella 26.92% others were staphylococcus, and enterococcus. The present study showed high occurrence of ASB in pregnant women. It also demonstrated that if disease was detected late in pregnancy it might lead to various maternal and neonatal complications despite treatment of infection. All the sequelae of ASB during pregnancy could be reduced by antimicrobial treatment early in pregnancy. Hence, screening and treatment of ASB need to be incorporated as routine antenatal care for an integrated approach to safe motherhood and newborn health.

REFERENCES

- J. Schnarr and F. Smail; Asymptomatic bacteriuria and symptomatic urinary tract infections in pregnancy; European Journal of Clinical Investigation vol 38 https://fhs.mcmaster.ca/medicine/infectious_diseases/residents/docs/Asymptomatic-bacteriuria-in-pregnancy.pdf
- Urinary Tract Infections in Pregnancy The Geneva Foundation for Medical Education and Research <https://www.gfmer.ch/omphi/maternal-infections/pdf/UTI-in-pregnancy.pdf>
- Sree Kumary Radha, Bindu Nambisan, Nisha Kizhekkepurakkal Prabhakaran, Shahida Jamal; Prevalence and outcome of asymptomatic bacteriuria in early pregnancy, International Journal of Reproduction, Contraception, Obstetrics and Gynecology Radha S et al. Int J Reprod Contracept Obstet Gynecol. 2017 Jan;6(1):223-227 www.ijrcog.org
- JOHN E. DELZELL, JR., M.D., and MICHAEL L. LEFEVRE, M.D., M.S.P.H., University of Missouri-Columbia School of Medicine, Columbia, Missouri; Am Fam Physician. 2000 Feb 1;61(3):713-720. <https://www.aafp.org/afp/2000/0201/p713.html>
- Dr. Valentina Y, Dr. Srirangaraj S, Dr. Seethesh Ghose, Seetha K. S; Asymptomatic Bacteriuria in Pregnancy: Prevalence & Diagnosis, International Journal of Innovative research & development, June, 2015 Vol4 Issue6, www.ijrd.com
- Romero et al; Metaanalysis of the relationship between asymptomatic bacteriuria and preterm delivery/low birth weight; Obstet Gynecol. 1989 Apr;73(4):576-82.
- Lavanya SV, Jugalakshmi D. Asymptomatic bacteriuria in antenatal women. Indian J Med Microbiol 2002;20:105-6
- Lindsay E. Nicolle, MD; Asymptomatic bacteriuria When to screen and when to treat; Infect Dis Clin N Am 17 (2003) 367-394; <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.379.5055&rep=rep1&type=pdf>
- Warren McIsaac, Anne Biringer, Joanne A, Permaul; Department of Family and Community Medicine, University of Toronto, Toronto Screening for asymptomatic Bacteriuria in Pregnancy, January JOGC Janvier 2005; Obstet Gynaecol Can 2005;27(1):20-24
- C.A. Turpin, Bridget Minkah, K.A. Danso, and E.H. Frimpong; Asymptomatic bacteriuria in pregnant women attending antenatal clinic at Komfo Anokye teaching hospital, Kumasi, GHANA, Ghana Medical Journal, March 2007 Volume 41
- Ullah A.M., Barman A., Siddique M.A., and Haque A.K.M.E Prevalence of asymptomatic bacteriuria and its consequences in pregnancy in a rural community of Bangladesh. Bangladesh med Res Conc Bull 2007;33:60-64
- Enayat K, Fariba F, Bahram N. Asymptomatic bacteriuria among pregnant women referred to out patient clinics in Sanandaj, Iran. Int Braz J Urol 2008;34:699-707 http://www.brazjurol.com.br/novembro_december_2008/Enayat_ing_699_707.pdf
- Gulfareen Haider, Shazia Rani, Saima Ghaffar, Ambreen Haider; Asymptomatic Bacteriuria in pregnancy; Pak Armed Forces Med J 2009; 59(4):484-7 484
- R J Girishbabu, R Srikrishna, S T Ramesh; International Journal of Biological & Medical Research; Int J Biol Med Res. 2011; 2(3): 740-742
- Perera Jennifer, Randeniya Cyril, Perera Piyumi, Gamhewage Nimesha, Jayalatharachchi Renuka; Asymptomatic Bacteriuria in Pregnancy: Prevalence, Risk factors and Causative Organisms, Sri Lankan Journal of Infectious Diseases 2012 Vol.1(2):42-46.