



ORIGINAL RESEARCH PAPER

ENT

ASYMPTOMATIC BACTERIURIA IN PREGNANCY IN A TERTIARY CARE HOSPITAL IN KOLKATA.

KEY WORDS: Asymptomatic bacteriuria, Urinary tract infection, Antibiogram.

Dr. Rina Das*

M.B.B.S (CAL), D.L.O, M.D (Microbiology) Assistant Professor, Dept of Microbiology, Calcutta National Medical College, Calcutta. India. *Corresponding Author

Dr. Bimal Kumar Mandal

Assistant Professor, Dept of ENT & Head-Neck Surgery, Calcutta National Medical College, Calcutta, India.

ABSTRACT

Background: Asymptomatic Bacteriuria (ASB) is a common problem in pregnancy and is associated with risk of preterm birth and pyelonephritis if untreated. The diagnosis is based on urine culture. The incidence of antibiotic resistance has been steadily increasing over the past few years resulting in limitation of therapeutic options.

Aims and Objectives: This study was carried out to determine the prevalence of ASB in pregnant women and also to isolate, identify and establish antimicrobial susceptibility pattern of the pathogens responsible for ASB.

Methods and Materials: The study includes 1600 pregnant women with from 18-50 years. Isolates were identified by conventional methods and there antibiotic susceptibility pattern was established. Results: Out of 1600 samples 12% were positive for significant bacteriuria. Escherichia coli (33.33%) was the most predominant organism followed by Klebsiella pneumonia (29.17%). Vancomycin, Linezolid, Amicacin, Meropenam, Piperacillin-Tazobactam were found to be the most effective antibiotics against the urinary isolates.

Conclusion: Asymptomatic Bacteriuria (ASB) is not uncommon among antenatal patients in the population studied. Routine urine culture test should be carried out on all antenatal patients in order to identify any unsuspecting infection. This measure will go long way in reducing maternal and obstetric complications associate with pregnancy.

INTRODUCTION

Urinary tract infection (UTI) is more common in female as factors like short urethra; pregnancy and easy contamination of the urinary tract which make them susceptible. In pregnancy additional factors like increased bladder volume with decreased tone, decreased urethral tone cause urinary stasis [1]. In pregnancy, various hormonal, mechanical changes lead to significant alterations in the urinary tract like dilatation, decrease in peristalsis in the ureter and decrease in bladder tone. The physiological increase in plasma volume during pregnancy, decrease urine concentration leading to decreased ability of the lower urinary tract to resist invading organisms [2,3]. In pregnancy, asymptomatic bacteriuria (ASB) is seen in 3-12% of women incidence is much more in developing and under-developed countries. A number of conditions like low socio economic status, multiparity, illiteracy, medical disorders like diabetes mellitus and sickle trait are also associated with increased incidence of ASB in pregnancy. Symptomatic bacteriuria occurs in 1-19% of women [4,5]. If untreated, UTI during pregnancy causes complication like acute pyelonephritis anemia, sepsis, renal failure and shock [6,7] and foetal complication like IUGR, acute respiratory distress syndrome and prematurity [8].

ASB is a microbial diagnosis based on the isolation of a specified quantitative count of bacteria in a properly collected specimen of urine from pregnant women without signs or symptoms of UTI. Thus urine culture is the gold standard screening technique for ASB during pregnancy [9,10].

Our study was designed to determine the prevalence of ASB in pregnant women and also to isolate, identify and establish antimicrobial susceptibility pattern of the pathogens responsible for ASB.

MATERIALS AND METHODS

This cross sectional study ASB was carried out in the department of Microbiology, Calcutta National Medical College, Kolkata from July 2016 to June 2017. A total 1600 pregnant women (18-50 years) without symptomatic for urinary tract infection, irrespective of trimester, attending for routine screening were included in our study.

Exclusion criteria

1. Indoor cases, sick patients, patients on antibiotic therapy for last two weeks
2. Patients with symptoms of UTI

3. Known congenital anomalies of urinary tract
4. Patients with pyrexia, Diabetes mellitus, Hypertention etc.
5. Contaminated samples.

Urine samples were collected by standard 'mid-stream clean catch' method from all the pregnant women, in a sterile, wide-mouthed container that can be covered with a tightly fitted lid. Laboratory processing was started within 2 hours of collection otherwise 1.8% boric acid was added to it or kept in refrigerator at 4 ° c.

Wet mount of uncentrifused urine, were seen under microscope. One leucocyte per 7 high power fields corresponds to 10000 leucocytes /ml, significant pyuria. The specimens were cultured on dried plates of MacConkey's agar by standard loop method and incubated at 37 ° c overnight. Culture results were interpreted as being significant and insignificant according to colony count following Kass standard criteria. The pure growth of bacteria were identified by routine gram stain, biochemicals, etc from the colony of samples showing significant bacteriuria (≥100000 colony per ml). More than one type of colony was taken as contaminated growth. The standardized Kirby-Bauer disc diffusion test of the Clinical and Laboratory Standards Institute (formerly NCCLS) was used for Antibiotic susceptibility testing and accordingly interpretations were carried out. The antibiotics tested were: Imipenem, amikacin, nitrofurantion, ceftazidime, cefotaxime, co-trimoxazole, amoycillin-clavulanic acid, norfloxacin, levofloxacin, piperacillin-tazobactam, linezolid, doxycycline and vacomycin.

RESULTS

This study shows highest number of culture positive cases among pregnant women the age group 18-25 years 52.08% (%). This was closely followed by 26-33 years 31.25% (%), 34-41 years 1.5% (%) and 42-50 years 4.17 (%) respectively. The young among the case studied was 18 years old and oldest was 50 yrs old (Table 1).

Out of 1600 samples processed, significant growth was found in 192 (12%) samples, while 1408 (88%) samples showed no growth. The common isolated organism being Escherichia coli 64 (33.33%), followed by Klebsiella pneumonia 56 (29.17%), Proteus mirabilis 10(5.21%), Acinetobacter spp. 20(12.5%), Citrobacter koseri 6(3.13%), Pseudomonas aeruginosa 14(7.29%), Staphylococcus aureus 12(6.26%) and Enterococcus faecalis 6(3.13%)(Table 2).

Table 1: Age distribution of the culture positive cases

Age group in years	Total no of culture positive cases	Percentage
18-25	100	52.08%
26-33	60	31.25%
34-41	24	12.5%
42-50	8	4.17%

Table 2: Distribution of culture positive cases according to spectrum of bacterial isolates.

Organisms	Total no of culture positive cases	Percentage
Escherichia coli	64	33.33%
Klebsiella pneumonia	56	29.17%
Proteus mirabilis	10	5.21%
Acinetobacter	24	12.5%
Citrobacter koseri	6	3.13%
Pseudomonas aeruginosa	14	7.29%
Staphylococcus aureus	12	6.26%
Enterococcus faecalis	6	3.13%
Total	192	100

Most of the isolates in our study were sensitive to drugs like Vancomycin, Linezolid, Amikacin, Meropenem, Doxycyclin, Amoxiclav, Nitrofurantoin and Norfloxacin in the order as follows.

Drug	% of sensitivity
Vancomycin	100%
Linezolid	90%
Amicacin	80%
piperecillin-tazobactam,	78%
Meropenem	78%
Levofloxacin	70%
Doxycyclin	60%
Amoxiclav	50%
Nitrofurantoin	30%
Norfloxacin	30%

Drug % of Resistance- Ampicillin-100%, Cefotaxime-85%, co-trimoxazole-80%

DISCUSSION

In this study, bacterial growth was observed in 12% of the asymptomatic pregnant women. The prevalence of asymptomatic UTIs has been previously reported to be 3% to 12% in pregnant women [11]. This variation may be explained by the fact that there were differences in the environments, social habits of the community, socioeconomic status, and standard of personal hygiene and education of the patients who were studied.

In this study of ASB, the frequently isolated organism was Escherichia coli (64%) followed by Klebsiella pneumonia(56%) which are correlating with the studies done by Sabhrwal et al [12].

In our study isolates showed 100% sensitivity to Vancomycin , 90% sensitivity to Linezolid, 80% sensitivity to Amicacin and Ampicillin, Cefotaxime and Co-trimoxazole were found to be resistant . These antibiogram pattern correlates with other studies done RJ Grish Babu et al [13].

CONCLUSION

The serious complications associated with this condition can be avoided by early detection and antibiotic treatment of women with positive cultures. Symptomatic bacteriuria poses no problems because of its easy diagnosis and treatment due to its overt symptoms but ASB is difficult to diagnose which is more common in pregnant women. Therefore to prevent untoward complications in the mother and baby that may arise due to ASB, it has been suggested to do routine screening for all pregnant women attending the antenatal clinic even in the absence of symptoms. Hence atleast one urine culture is needed as a part of antenatal care to rule out ASB.

REFERENCES

- [1] Chaliha et al, British Journal of Urology International. 2002;89:469-76.
- [2] Belty A, Daniel FF, Alice SS, Wersfeld. Urinary tract infections, Chapter 57, Bailey and Scott's Diagnostic Microbiology. 12TH Edition, St Louis Moren Mosby, 1998; 556-580.
- [3] F. Gary Cunningham, Kenneth J. Leveno, Steven L. Bloom, John C. Hauth, Dwight J. Rouse, chapter 48 page-1033, Williams obstetrics. 23rd edition: ISBN: 978-0-07-170285-0.
- [4] Masinde A et al., Tanzania Journal of health Research. 2009;11:154-9.
- [5] Dwauer et al., Current opinion in Obstetrics and Gynaecology.2002;14:537-43.
- [6] Mohammed M et al., South East Asian Journal of Tropical Medicine and Public Health 2002;33:575-80.
- [7] Gilstrap et al., Obstetrics and Gynaecology Clinics of North America 2001;28:581-91.
- [8] Me Dermott S et al., Journal of family practice, 2001;50:433-7.
- [9] Petterson TF, Andriole VT: Bacteriuria in pregnancy. Infect DisClin North Am 1987;1(4):807-822.
- [10] Gayathree I, Shetty S, Deshpande SR, Venkatesh dt. Screening for asymptomatic bacteriuria in pregnancy:An evaluation of various screening tests in Hassan District Hospital, India. ICDR 2010;4(4):2702-2706.
- [11] Ansar HQF, Rajkumari A. Prevalence of asymptomatic bacteriuria and associated risk factors among antenatal women attending a tertiary care hospital. J Med Allied Sci. 2001;1(2):74-78.
- [12] Sabharwal ER. Antibiotic susceptibility patterns of uropathogens in obstetric patients. Nam JMed Sci. 2012;4(7) : 316-319.
- [13] Girishbabu RJ, Srikrishna R, Ramesh ST. Asymptomatic bacteriuria in pregnancy. Int J Biol Med Res.2011;2:740-2.