



SYMPTOMATIC AND ASYMPTOMATIC BACTERIURIA IN PREGNANT WOMEN ATTENDING TERTIARY CARE HOSPITAL.

Microbiology

Dr Alpana Wagh

Assistant Professor, Department Of Microbiology, Seth G.S. Medical College And KEM Hospital, Parel, E-Mumbai-400012.

Dr Sarita Kothadia*

Ex-HOD, Department Of Microbiology, Dr. V.M. Government Medical College, Solapur.
*Corresponding Author

ABSTRACT

The adverse effects of undiagnosed asymptomatic bacteriuria (ASB) on mother and child have made researchers to suggest routine culture screening for all pregnant women. This work is aimed at determining microbiological profile of ASB and symptomatic bacteriuria of 300 pregnant and 300 non pregnant women. Total 12.67% and 87.3% cases were found to be in symptomatic and asymptomatic category respectively in study group. While 2% cases and 98% cases were found to be in symptomatic and asymptomatic category respectively in control group. Significant Bacteriuria was found to be 6.6% (5% in first trimester and 7.5% in second trimester) in symptomatic cases and 4.6% cases (1% in first trimester and 6.5% in second trimester) in asymptomatic cases in pregnant women. Untreated ASB is a risk factor for pyelonephritis in pregnancy. Hence, pregnant women should be screened early on and treated with a short course of antibiotics.

KEYWORDS

Asymptomatic Bacteriuria, Significant Bacteriuria, Uti, Pregnancy

1. INTRODUCTION :

UTI (Urinary Tract Infection) in pregnancy, though not a serious disorder, if not curtailed within time, can give rise to disastrous complications. However the pathogenesis, natural history and optimal treatment have been defined more clearly recently, especially the prevalence of asymptomatic bacteriuria (ASB) in pregnancy and subsequent risk of developing a symptomatic UTI has been well established (1) ASB 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 UTI (2). This is common during pregnancy. The apparent reduction in immunity of pregnant women appears to encourage the growth of both commensal and non-commensal microorganisms (3). It has been noted that 2-4% total asymptomatics and 30% total symptomatics can develop pyelonephritis (4).

Pregnancy enhances the progression from asymptomatic to symptomatic bacteriuria which could lead to pyelonephritis and adverse obstetric outcomes (5) and higher foetal mortality rates (6) The adverse effects of undiagnosed ASB on mother and child have made researchers to suggest routine culture screening for all pregnant women (7).

According to studies by Lavanya et al (8), proper antimicrobial or antibiotic therapy has reduced the rate of infections. The relatively high prevalence of ASB during pregnancy, the significant consequence for the pregnancy, plus the ability to avoid sequel with treatment, justify screening pregnant women for bacteriuria (9). With this scenario, this work is aimed at determining microbiological profile of ASB and SB in pregnant women.

2. MATERIAL AND METHODS :

2.1 PLACE OF WORK :

Study was carried out from January to December, 2005 after taking the permission from Institutional Ethics committee of Dr. V.M. Government Medical College, Solapur, in the Department of Microbiology in association with Department of Obstetrics and Gynecology.

2.2 PARTICIPANTS :

300 married pregnant (study group) from Gynecology department, attending Anti Natal Checkup OPD, at Shri. Chatrapati Shivaji Maharaj Sarvopchar Rugnalaya, Solapur and 300 non pregnant women from a neighboring slum area (control group) were included in the study. Of study group, 100 women belonged to first trimester, while 200 belonged to the second trimester of pregnancy. Detailed data from the patients were recorded in a specially formulated structured proforma. Continuous follow-up of subjects was done up to delivery.

2.3 COLLECTION AND MICROBIOLOGICAL ANALYSIS :

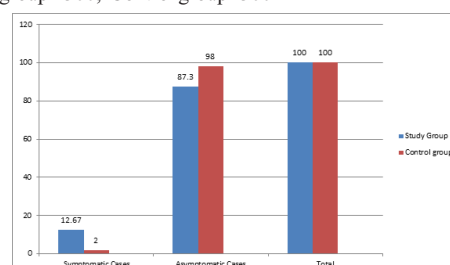
Collection and transportation of urine was carried out by standard

procedures (10). Microscopic examination was done by Wet film examination (11) and Gram staining using Hucker's modification (12). Identification of isolates was done on basis of morphological, cultural characteristics and biochemical tests (13).

3. RESULTS :

Graph 1 : Distribution of symptomatic and asymptomatic cases in the study and the control group. (%)

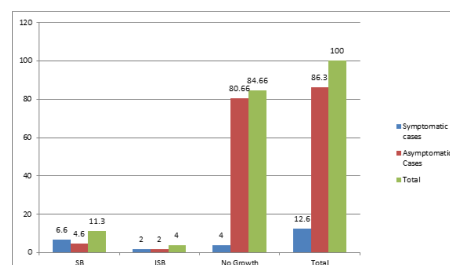
Study group = 300, Control group = 300



Total 12.67% cases and 87.3% cases were found to be in symptomatic and asymptomatic category respectively in the study group. While 2% cases and 98% cases were found to be in symptomatic and asymptomatic category respectively in the control group.

Graph2 : Frequency distribution of culture status of urine of pregnant women in study group (%)

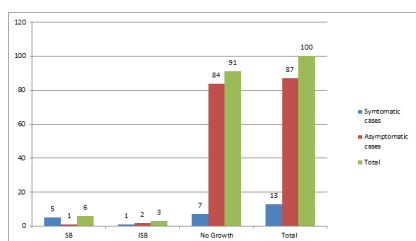
n=300



Total 12.6% cases were observed as symptomatic and 86.3% cases as asymptomatic. Significant Bacteriuria was found to be 6.6% in symptomatic cases and 4.6% cases in asymptomatic cases in pregnant women.

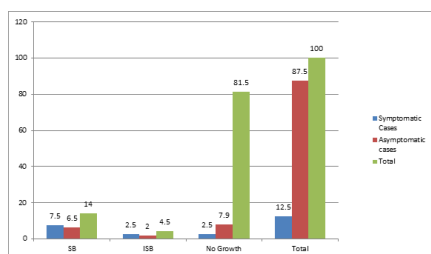
Graph 3 : Frequency distribution of culture status of urine of pregnant women in study group in first trimester (%)

n=100



Total 13.0% cases were observed as symptomatic and 87.0% cases as asymptomatic. Significant Bacteriuria was found to be 5.0% in symptomatic cases and 1.0% cases in asymptomatic cases in pregnant women in first trimester.

Graph 4: Frequency distribution of culture status of urine of pregnant women in study group in second trimester(%)
n=200



Total 12.5% cases were observed as symptomatic and 87.5% cases as asymptomatic. Significant Bacteriuria was found to be 7.5% in symptomatic cases and 6.5% cases in asymptomatic cases in pregnant women in second trimester.

4. DISCUSSION :

Ever since Kass et al (9) opened doors to the topic of urine infections in pregnancy, many pioneering workers have toiled hard to establish their reports of urinary infections with adverse obstetric outcome. It was since then that UTI in pregnancy has been always a subject of research. Bacteriuria in the presence of symptoms suggestive of UTI, that is pain in the lower abdomen, fever with chills, dysuria, lower backache, burning sensation during micturition is Symptomatic Bacteriuria. It is also conceivable that development of symptomatic disease may protect the patients from complications, since symptomatic disease leads to treatment. According to Bandhopadhyay et al (14), bacteriuria if not treated aggressively could mean life threatening consequences for both the mother and the child. He adopted a score card for screening of bacteriuria during pregnancy.

Marchant et al (15) had quoted ASB as a condition characterized by absence of symptoms of acute urinary infection when true bacteriuria exists. Nicole et al (16) has stated that approximately 30-40% pregnant women with ASB identified in first trimester, who are not treated with antimicrobials develop pyelonephritis later in pregnancies, this occurs most frequently at the end of the second or beginning of third trimester, which itself has a potential for adverse foetal outcome. Lavanya et al (8) found the rate of ASB to be 8.4%. Kriplani et al (17) in a study conducted in AIIMS, found the prevalence of ASB to be 6.8%.

In the present study pregnant women from first and second trimester were screened provisionally for bacteriuria and subjected to bacteriological processing. The follow up study was possible among 179 pregnant women and significant bacteriuria was detected by standard culture methods. In this study, total 12.67% cases and 87.3% cases were found to be in symptomatic and asymptomatic category respectively in the study group. While 2% cases and 98% cases were found to be in symptomatic and asymptomatic category respectively in the control group. Total 12.6% cases were observed as symptomatic and 86.3% cases as asymptomatic. Significant Bacteriuria was found to be 6.6% in symptomatic cases and 4.6% cases in asymptomatic cases in pregnant women. Total 13.0% cases were observed as symptomatic and 87.0% cases as asymptomatic. In the present study, significant bacteriuria was found to be 5.0% in symptomatic cases and 1.0% cases in asymptomatic cases in pregnant women in first trimester. Total 12.5% cases were observed as symptomatic and

87.5% cases as asymptomatic. While, significant bacteriuria was found to be 7.5% in symptomatic cases and 6.5% cases in asymptomatic cases in pregnant women in second trimester. Harris et al (18) found significant bacteriuria in about 7.4% cases, while Bandhopadhyay et al (14), evaluated 161 cases where they found the overall significant bacteriuria to be 24.2% and 19.87% cases were symptomatic and 4.34% cases asymptomatic. Sharma et al (19), conducted a study in Rohtak in pregnant women in the third trimester and found the overall significant bacteriuria to be 36% in preterm cases (third trimester). Mac Fadyen et al (20) found out overall significant bacteriuria to be 6.6%. Heinman et al (21) in his study revealed overall significant bacteriuria to be 9.7%. Sleight et al (22) reported significant bacteriuria to be 5.3%, while Kass et al (9) reported an overall incidence of 7%. Turner et al (23) in Scotland found the overall incidence of significant bacteriuria to be 7.5%. In Melbourne, overall incidence of significant bacteriuria was 6% according to Kincaid-Smith et al (24). Millar et al (25) in a study conducted at Honolulu in 2000, found significant bacteriuria to be 6.6% and Kothadia et al (26), at Kolhapur found the overall rate of significant bacteriuria as 14% and asymptomatic bacteriuria to be 22.3%.

Bacteriuria is reported higher in the Asian Continent than the Western countries owing to lower standard of living, poverty, malnutrition, unhygienic practices and illiteracy. UTI had been studied since ages. Many workers had successfully proved gram negative bacilluria to be the commonest cause of UTIs. Study conducted by Dept of Gynecology and Obstetrics in Pakistan Medical Research Council by Shaikh et al (27) documented it. They found 28.6% cases asymptomatic and 29.5% cases symptomatic. The incidence of ASB has been found to range from 2 to 10% by various authors (6), (9), (28). In India the incidence was estimated to be 5 to 12.5% (17), (18).

5. CONCLUSION

Symptomatic and ASB is commonly encountered in pregnant women. Previous UTI and low socioeconomic status are risk factors for bacteriuria in pregnancy. Untreated ASB is a risk factor for pyelonephritis in pregnancy. But, no conclusion about the association between ASB and adverse pregnancy outcomes can be made from the available literature. The strength of the association between treatment of ASB and acute pyelonephritis will preclude any further investigation of the effects of untreated ASB on pregnancy outcomes. Acute pyelonephritis has associated maternal complications, but debate exists, whether is associated with adverse fetal outcomes. (29). However pregnant women should be screened early on and, if the condition is present, treated with a short course of antibiotics. But, increasing antibiotic resistance complicates empirical regimens and local resistance rates need to be taken into consideration when deciding on therapy.

7. ACKNOWLEDGEMENT :

Authors are grateful to Department of Microbiology of Dr. V.M. Government Medical College, Solapur and ANC OPD at Shri. Chatrapati

Shivaji Maharaj Sarvopchar Rugnalaya, Solapur for providing facility and moral support to carry out this study.

8. REFERENCES :

- Andriole VT, Patterson TF. Epidemiology, Natural History and Management of UTI in Pregnancy. *Medicine Clinics of North America*. 1991;75:359-373.
- Gilbert DN, Moelleaving RC, Jr, Eliopoulos GN, Sande NA. Sanford guide to Antimicrobial therapy. Edn 32, Hyde Park, Vermont: Antimicrob. Therapy, Inc; 2005. pp. 22-23.
- Scott JR, Whitehead ED, Naghes HM. Obstetrics and Gynaecology. Edn 6, Boston: McGraw Hill; 1990. pp. 60-80.
- Lucas MJ, Cunningham G. Urinary tract Infections in Pregnancy. *Clinical Obstetrics and Gynaecology*. 1993; 36:855-866.
- Connolly A, Thorp JM, Jr. Urinary tract infection in pregnancy. *Urol Clin North Am*. 1999;26(4):779-787.
- Nicoll LE. Screening for asymptomatic bacteriuria in pregnancy. *Ottawa Health, Canada: Canadian guide on preventive health care*; 1994. 100-106.
- Kirkham C, Harris SG. Evidence-based prenatal care: part II. Third-trimester care and prevention of infectious diseases. *Am Fam Physician*. 2005;71:1555-1560.
- Lavanya S, Jugalaxmi D. Asymptomatic bacteriuria in antenatal women. *IJMM*. 2002; 20:105-106.
- Kass EH. Bacteriuria and Pyelonephritis of Pregnancy. *Arch Internal Medicine*. 1960;105:194-8.
- Koneman EW, Allen SD, Janda WM. Urinary tract infections. In: *Color atlas and textbook of diagnostic microbiology*. Edn 14, J.B. Lippincott Company, 1997, 136-141.
- Delost MD. Urinary tract infections. In: *Introduction to Diagnostic Microbiology a text and workbook*. 1997, Mosby; 312-345.
- Isenberg HD. Urine Culture Procedure. In: *Clinical Microbiology Procedures*; American Society for Microbiology Press, Volume 1: 1992, Section: 1.4.10-1.4.11.
- The Himedia Laboratories Manual of Microbiology. 1998, Mumbai, India.

14. Bandhopadhyay S, Ray P, Kumar R. High prevalence of Bacteriuria in Pregnancy and its screening methods in North India. JIMA 2005;103:259-262.
15. Marchant DJ. Urinary tract Infections in Pregnancy .Clinical Obstetrics and Gynaecology.1978;21:921-929.
16. Nicolle LE. Screening for Asymptomatic Bacteriuria in Pregnancy. Canadian Guide to Clinical Preventive Health Care. 1994; 100-6.
17. Kriplani A, Buckshee K , Rattan A. Asymptomatic Bacteriuria in Pregnant Indian Patients: Screening by Simple methods . Journal of Obstetrics and Gynaecology of India. 1993;43:489-491
18. Harris R, Larry C, Gilstrap L. Cystitis during Pregnancy: A distinct Clinical Entity. Obstetrics and Gynaecology.1981; 57:578-580.
19. Sharma JB . Prevalence Of Significant Bacteriuria In Preterm Labour. Journal of Obstetrics and Gynaecology of India. 1990; 40: 336-338.
20. MacFayden IR, Eykyn SG, Gardner NH. Bacteriuria in Pregnancy. Journal of Obstetrics and Gynecology Of British Commonwealth. 1973; 80: 385-405
21. Heineman H, Lee J. Bacteriuria in Pregnancy. Obstetrics and Gynaecology 1972: 22-26.
22. Sleight J, Robertson J, Isdale M. Asymptomatic Bacteriuria in Pregnancy. Journal of Obstetrics and Gynaecology. 1964; 71: 74-81
23. Turner GC. Bacilluria in pregnancy. Lancet. 1961; 2: 1062-1064.
24. Kincaid-Smith P, Bullen M. Bacteriuria in Pregnancy. Lancet. 1961;2:61.
25. Millar L, Debuque RN. Rapid enzymatic urine screening test to detect bacteriuria in pregnancy. Obstetrics and Gynaecology 2000; 95: 601-604.
26. Kothadia S. Udgonkar U, Shah A. UTI in pregnancy: A Preliminary Study. Spectrum. 2004; 1: 41-42.
27. Shaikh MA., Khan MS., Khatoon AL. Incidence of Urinary Tract Infection During Pregnancy. Eastern Mediterranean Health .2002: 28.
28. Whalley PG. Bacteriuria in pregnancy. American journal of Obstetrics and Gynaecology.1967:724-737.
29. Schnarr J and Smaill F. Asymptomatic bacteriuria and symptomatic urinary tract infections in pregnancy. Eur J Clin Invest. 2008; 38 (S2): 50–57.