ORIGINAL ARTICLE

Risk Factors and Frequency of Asymptomatic Bacteriuria during Pregnancy

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ABSTRACT

Aim: To determine the risk factors and frequency of asymptomatic bacteriuria during pregnancy.
Design: Cross-sectional study.
Place and duration of study: Surayya Azeem (waqf) Hospital from August, 2010 to July, 2011.
Methods: 580 women were selected by systemic random sampling data collected was coded, computed and analyzed on SPSS version. Chi-square test was used as test of significance.
Results: 580 women, fulfilling the inclusion criteria, were tested for bacteriuria. Out of them, 4% were below 20 years, 4.6% were 20-30 years and 5.4% women were above 30 years (p=0.103). Regarding parity 3.8% of primigravida and 6.04% multigravida had bacteriuria (p=0.00039). Prevalence was 6.64% among uneducated and educated women (p=0.0039). As for past history, 35.7% of women had an episode previously (p=0.001). No association was found with anemia.
Conclusion: Asymptomatic bacteriuria is common infections during pregnancy, having strong association with multiparity, lower socioeconomic group and illiteracy.
Keywords: Asymptomatic bacteriuria, risk factors and pregnancy

INTRODUCTION

The prevalence of urinary tract infection (UTI) ranges from 2–10%[1]. It is the most common infection in pregnancy. Four major forms of the infection are asymptomatic bacteriuria (ABU), cystitis, pyelonephritis and acute urethral syndrome. Urinary tract changes during pregnancy that is pyelocalyceal and ureteric dilatation, decreased peristalsis and immunological changes make pregnant women more susceptible to symptomatic infection leading to serious maternal and fetal sequel.

Female gender itself is a risk factor because of short urethra, its proximity to vagina and anus and inability of women to empty their bladder completely. Increasing parity increases the risk[2]. Risk also increases with advancing age by 1 to 2% per decade. High incidence is seen in lower socioeconomic group[3]. Sexual activity and certain contraceptive methods are also said to increase the risk[4].

Regarding genetic factors non secretors of histo blood group and women with sickle cell trait are more susceptible to UTI[5]. Abnormalities of urinary tract or stones, diabetes mellitus, immunosuppression, AIDS and past history of UTI tend to increase the risk[6].

PATIENTS AND METHODS

It was a cross sectional study conducted from August, 2007 to July, 2008. Inclusion criteria for the study were pregnant ladies having no clinical features suggestive of urinary tract infection. Symptomatic women, women with any medical or renal disease and those who had taken antibiotic in the last 6 weeks were not included in the study. 580 women fulfilled the criteria and were included in the study. After informed consent detailed history including obstetrical, gynecological and past medical history was taken. Women with any medical or renal disease were excluded. Dipstick test was performed on mid stream urine and urine was cultured in case of positive dipstick test. Nutritional status was assessed by hemoglobin estimation. Hb level were determined by Sahli's method and female with hemoglobin level less than 10.5 gm/dl were classified as anemic. Socio-economic status was also assessed and divided into lower, middle and upper social class regarding family income i.e., Rs. 5000/- per month, Rs. 15,000/- per month or more than 15,000/- per month. Data collected was coded, computed and analyzed on SPSS version 10. Frequency was run and chi square test was used as test of significance with significance level kept at $P \leq 0.05$.

RESULTS

Among 580 women included in the study, 28 had bacteriuria giving prevalence of 4.8%. The effect of maternal age was studied and result showed that 04 (4%) below 20 years, 14 (14.6%) were between 20 & 30 years and 10 were above 30 years showing no statistically significant difference (p=0.103). Prevalence of bacteriuria at different periods of

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gestation, also showed no statistically significant results (p=0.103). Nutritional status was assessed indirectly by anemia. No significant differences were seen among bacteriuric and non-bacteriuric women (p=0.013) Table 1. Parity was also a significant variable as 4 were primigravida and 24 were multigravida showing an increase in prevalence with increasing parity (p=0.003). Significant impact of socioeconomic status was seen with 22 women from lower class, 6 from middle and upper class (p=0.039). Assessing the risk of recurrence, past history of UTI came out to be as strongest risk factor as 10(37.5%) of 28 females had positive past history of UTI. In comparison to 54 out of 552 non bacteriuric women (p=0.001) Table 2.

Table 1: Variables found to have no association with asymptomatic bacteriuria

Variable	**Bacteriuria**	
	Yes	**No**
Age in years(P value 0.103)		
< 20	04	92
20-30	14	286
>30	10	174
Hb level *(P value 0.103)*		
<10.5 gm/dl	24	456
>10.5 gm/dl	04	96
Gestational age in weeks (P value 0.103)		
Upto 16	05	124
28 weeks	14	272
>28 weeks	08	156

Table 2: Variables found to have association with asymptomatic bacteriuria

Variable	**Bacteriuria**	
	Yes	**No**
Parity (P value 0.0039)		
Primigravida	04	179
Multigrafida	24	373
Socioeconomic status (P value 0.0039)		
Lower class	22	319
Middle & upper middle class	06	233
Past history of UTI (P value 0.001)		
Positive	10	54
Negative	18	498

DISCUSSION

Asymptomatic bacteriuria is common during pregnancy[7]. It shows a clear predisposition to the development of symptomatic urinary tract infection, which in turn poses risks to mother and fetus. The higher risk of symptomatic UTI in pregnant women was previously explained by anatomical and obstructive changes. Current evidences propose a receptor mediated ascending infection. The immune system of pregnant mother is modified to accommodate a semi-alogenic fetus which makes her more susceptible to urogenital infection and its associated risk. Complications can be acute pyelonephritis, hypertension, anaemia, preterm labor and intra-uterine growth retardation. Screening and treating all pregnant women with asymptomatic bacteriuria, to avoid complication, is considered an intervention of proven benefit. The frequency of bacteriuria in the study was 4.8%. This figure falls within 2-10% range of prevalence. Maternal age was not found to be a significant risk factor. The prevalence rate of bacteriuria in pregnant and non pregnant women is essentially the same. It is only the physiological changes of pregnancy which makes them more susceptible to fetal and maternal morbidity. The fact was observed by a similar prevalence at different periods of gestational amenorrhea in our study. It shows that bacteriuria invariably present either before or in early pregnancy and only 1-2% occurs late during pregnancy. Anaemia was not found to be a risk factor in the study. Same was observed in another study conducted at Agha Khan University Hospital, Karachi. Anaemia associated with sickle cell trait is, however, said to double the prevalence[2].

Increasing parity is a known risk factor[2] and was seen to exist in 3.18% of primigravida and 6.04% of multigravida. Changes in urinary system with each pregnancy seemed to be responsible for it. Females from lower socioeconomic status were found to have a significantly higher incidence. It could be due to the existence of unhygienic toilet facilities in poor communities. Past history of UTI came out to be the strongest risk factor in our study. Most of the studies, acknowledge the significance of past UTI in causing asymptomatic bacteriuria in pregnancy. Pastore and colleagues found that two strongest predictors of bacteriuria at prenatal care were an antepartum urinary tract infection prior to prenatal care and a pre-pregnancy history of UTI[2]. Proper screening and rational therapy of asymptomatic bacteriuria is likely to prevent recurrence and associated risks. This study showed that the frequency of asymptomatic bacteriuria has strong association with multiparity, lower socio economic status and previous history of UTI. It highlights the need on the part of health care providers to realize the importance of screening pregnant women for asymptomatic bacteriuria. Mass education, sanitation and hygienic practices are likely to decrease the prevalence and associated morbidity of UTI.

CONCLUSION

Asymptomatic bacteriuria is a common infection during pregnancy. It has strong association with mutliparity, lower socio economic status and previous history of UTI.

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