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ORIGINAL ARTICLE

Frequency of Asymptomatic Bacteriuria in Pregnant Women

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ABSTRACT

Objectives: To determine the frequency of asymptomatic bacteriuria in pregnantwomen.
Study design: Descriptive, Cross sectional study
Place and Duration: Department of Obstetrics & Gynaecology, Benazir Bhutto Hospital, Rawalpindi. 26th December 2017 to 25th June 2018
Materials & Methods: A total of 151 pregnant women of gestational age ≥28 weeks, 18 to 40 years of age were included. Patients with genital tract trauma, history of UTI in the past one year and urinary tract stones were excluded. Then clean-catch midstream urine was collected from each woman into a sterile universal container and sample was sent to the institutional laboratory for presenceor absence of asymptomatic bacteriuria.
Results: Age range in this study was from 18 to 40 years with mean age of 28.78 ± 3.90 years. Majority of the patients 84 (55.63%) were between 18 to 30 years of age. Mean gestational age was 31.06 ± 1.67 weeks. Mean parity was 3.17 ± 0.99. Mean BMI was 27.44 ± 3.02 kg/m2. In our study, frequency of asymptomatic bacteriuria in pregnant women was found in 25 (16.56%) patients.
Conclusion: This study concluded that frequency of asymptomatic bacteriuria in pregnant women is quite high.
Keywords: Asymptomatic Bacteriuria, Pregnancy, Urinary Tract Infection.

INTRODUCTION

Pregnant women are more likely to get a urinary tract infection (UTI) than the general population [1]. It is defined as both urine microbial contamination and urinary tract tissue invasion [2]. The term asymptomatic bacteriuria (ASB) refers to a condition in which the urine still contains a substantial number of bacterial CFU/mL despite the absence of signs and symptoms [3]. Mechanical compression, alterations in the immunological and renal systems, and hormonal changes all have a role in the development of ASB during pregnancy [4]. Approximately 11% of pregnant women have bacteriuria that goes unnoticed [5]. It was reported to be 17.0 percent in another investigation [6]. According to a study, 19% of patients had asymptomatic UTIs [7]. Pregnant women were reported to have 45.3 percent asymptomatic bacteriuria in another investigation [8].

Pregnant women who have untreated bacteriuria are more likely to have a baby with a low birth weight. ASB is related with preterm birth, hypertension, recurrent abortion, intrauterine growth restriction (IUGR), polyhydramnios and oligothoma, premature rupturing of membranes, and labour induction [9-10]. During the postpartum period, ASB can increase the chance of developing pyelonephritis [10]. As a result, it has been recommended that all pregnant women at the Antenatal clinic be routinely screened for ASB, even if there are no symptoms [11].

Pregnant women have been shown to have significant morbidity linked with bacteriuria that is asymptomatic. More than half of pregnant women with asymptomatic bacteriuria in the first trimester who are not treated with antimicrobials develop pyelonephritis in the second or third trimester [8] if they are not given antibiotics. Pregnancy-related pyelonephritis frequently necessitates hospitalisation. Pyelonephritis is related with early labour much like any other feverish sickness that occurs later in pregnancy. This syndrome has also been linked to intrauterine growth retardation and early rupture of membranes, but bacteriuria could merely be an associated condition rather than the cause of these unfavourable pregnancy outcomes [9].

Pregnant women's educational status and socioeconomic status have been found to be risk factors for asymptomatic bacteriuria, so this study was conducted in an effort to determine the prevalence of this condition among pregnant women in my local population, as previously available studies have shown a wide variation in the prevalence of this condition across populations. As well as adding to the worldwide and national literature, my research will also help us understand the scope of the problem. There is a need for a local study to determine the frequency of asymptomatic bacteriuria in pregnant women because the majority of our population is from the peripheral and is not well-educated. This means that these patients can be given empirical therapy rather than waiting for the culture report, and some practical recommendations can be made in our routine practise guidelines for detection of asymptomatic bacteria in the urine during pregnancy, as it may lead to symptomatic infection during that pregnancy as well as chronic infections resistant to chemotherapy, pyelonephritis, low-birth-weight babies, and premature delivery.

MATERIAL AND METHODS

This cross sectional study was conducted at Department of Obstetrics &Gynaecology, Benazir Bhutto Hospital, Rawalpindi, during from 26th December 2017 to 25th June 2018. Total 151 pregnant women with ages 18 to 40 years were included in this study. Detailed demographics including age, gestational age, parity, BMI and complete blood count were recorded after taking written informed consent. Patients with history of genital tract trauma, symptoms suggestive of infections in urinary tract, patients with history of UTI in the past one year or during this pregnancy, women with urinary tract stones, and women who have taken antibiotics with in last 4 weeks were excluded.

Clean-catch midstream urine was collected from each woman into a sterile universal container and sample was sent to the institutional laboratory for presence or absence of asymptomatic bacteriuria. Presence of bacteria ≥105/ml on complete urine examination without dysuria, urgency and frequency was taken as positive.

All the data was entered and analyzed by using SPSS version 20.0. Age, gestational age, parity, height, weight and BMI were presented as mean and standard deviation. Frequency and percentage were calculated for gestational diabetes mellitus (yes/no), place of living (rural/urban), monthly income(≤20000/20001-40000/>40000), educational status(illiterate/primary/middle/matric/graduate) and asymptomatic bacteriuria (yes/no).

RESULTS

Mean age of 28.78±3.90 years. Majority of the patients 84 (55.63%) were between 18 to 30 years of age. Mean gestational age was 31.06±1.67 weeks. Mean parity was 3.17±0.99. Mean BMI was 27.44±3.02 kg/m^2. Distribution of patients according to monthly income, distribution of patients according to place of living, education level and GDM is shown in Table 1.

Table No 1: Baseline characteristics of all the patients

Variables	Frequency No.	%age
Mean age (years)	28.78±3.90	-
Mean Gestational age	31.06±1.67	-
Mean Parity	3.17±0.99	-
Mean BMI (kg/m)	27.44±3.02	-
Monthly Income		
<20000	33	21.85
20001-40000	56	37.09
>40000	62	41.05
Residence		
Urban	97	64.24
Rural	54	35.76
Education		
Illiterate	64	42.38
Literate	87	57.62
GDM		
Yes	36	23.84
No	115	76.16

In our study, frequency of asymptomatic bacteriuria in pregnant women was found in 25 (16.56%) patients (Figure I).

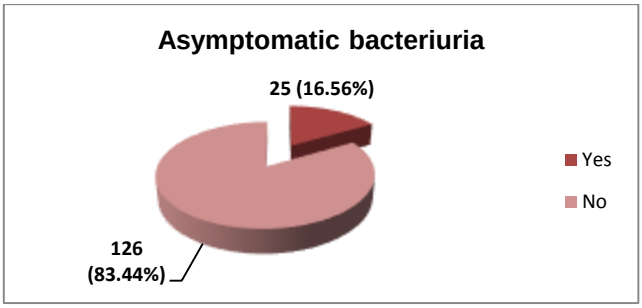

Figure No 1: Frequency of Asymptomatic Bacteriuria

Stratification of asymptomatic bacteriuria with respect to age groups and gestational age is shown in Table II &III respectively. Table IV have shown the stratification of asymptomatic bacteriuria with respect to GDM.

Table No 2: Stratification of asymptomatic bacteriuria with respect to age groups.

	asymptomatic bacteriuria		p-value
Age (years)			
	Yes	No	
18-30	10	74	0.085
31-40	15	52	

Table No 3: Stratification of asymptomatic bacteriuria with respect to gestational age.

	asymptomatic bacteriuria		p-value
GA (weeks)			
	Yes	No	
28-32	24	98	0.035
>32	01	28	

Table No 4: Stratification of asymptomatic bacteriuria with respect togestational DM.

	asymptomatic bacteriuria		p-value
GDM			
	Yes	No	
Yes	07	29	0.593
No	18	97	

DISCUSSION

Bacteria in the urine is called asymptomatic bacteriuria. An infection in the urinary tract (UTI) occurs when the urine culture shows a considerable development of pathogens that exceeds 105 bacteria/ml, although the patient does not exhibit any signs of an infection. During pregnancy, this is common. [13] Pregnant women tend to have a reduced ability to fight against both commensal and noncommensal bacteria. Pregnant women are more likely to suffer from glucosurea, a condition in which the concentration of urine drops due to an increase in plasma volume.

An increase in bacteriuria during pregnancy increases the risk of pyelonephritis as well as unfavourable obstetric outcomes such as preterm labour, low birth weight, and increased foetal mortality rates [16-17]. Undiagnosed asymptomatic bacteriuria can have serious consequences for mother and child, which has led to the recommendation of researchers of routine culture screening for all pregnant women attending prenatal clinics [18]. The goal of this investigation was to find out how often asymptomatic bacteriuria is in pregnant women.

Between 18 and 40 years old, the average age in my study was 28.78 +/- 3.00. Between the ages of 18 and 30, 84 of the patients (55.63 percent) were diagnosed with a kind of cancer. According to our investigation, pregnant women with asymptomatic bacteriuria were discovered in 25 (16.56 percent). Approximately 11% of pregnant women have bacteriuria that goes unnoticed [5]. It was reported to be 17.0 percent in another investigation [6]. UTI prevalence was found to be 19.9% among the participants of the study. 7 Pregnant women were reported to have 45.3 percent asymptomatic bacteriuria in another investigation [8].

A research indicated that 10.2 percent of people had asymptomatic bacteriuria [19]. According to Ullahet et al., the prevalence rate in Bangladesh was 12 percent [20]. Prevalence rates in research by different authors ranged from 4% to 23.9 %, according to a review of literature. 91 This study's findings are very much in line with this one. In some communities, the prevalence of unnoticed bacteriuria is higher than in others. Asian studies found that prevalence of bacteriuria ranged from 6 to 16 percent in India, from 6.2 to 28.5 percent in Pakistan, and 9.8 percent in Nepal [26–28]. African studies found 10.6 percent in Ethiopia, 13 percent in Tanzania, 37.5 percent in Ghana, and 43.3 percent in Nigeria [27-30]. [27-30].

In industrialised countries, researchers found similar results. Bacteria-infested urine is common among pregnant women in the United States, Canada, and Spain, where it can be as high as 16 percent [31]. As a result of characteristics such as ethnicity and location (primary care versus community-based or hospital-based), there is a wide range of variation in the results (urine dipstick, microscopy and culture).

The infection rate was highest among those between the ages of 31 and 40, followed closely by those between the ages of 18 and 30. According to Alghalibi et al [32], pregnant women aged 21-25 years had a greater incidence of UTIs, while pregnant women aged 35-39 years had an increased prevalence of ASB. Maternal age 35 years was found to be a risk factor for asymptomatic bacteriuria. According to the results of this study and other studies, pregnant women between the ages of 31 and 40 are at the greatest risk for developing UTIs.

As Roy et al [35] and Obirikorang et al [36] found, multigravidae had a greater frequency of asymptomatic bacteriuria in my study. Pregnant women are more likely to be infected in the second trimester, according to studies by Roy et al and Nath et al [37, 38]. In the first and early second trimesters of pregnancy, Turpin et al [33] found that a high percentage of asymptomatic bacteriuria was attributable to pregnant women reporting to the prenatal clinic for booking. Due to hormonal changes taking place before anatomical changes, the first trimester has a higher incidence rate. The first study done by Kass explains that after the second month of pregnancy, bacteriuria is extremely rare [39].

No statistically significant correlation was found among ASB, maternal age, socioeconomic status, educational level, or

gestational age and parity ($p > 0.05$). Because of the tiny sample size, this is most likely the case. ASB was more common in women who had given birth multiple times, which is consistent with findings from a previous study [40]. These findings suggest that high parity is associated with a decrease in urinary tract and urethral orifice size, which affects microorganism ascent [41-43].

In order to select and complete a suitable antibiotic course, an accurate diagnosis of pathogenic bacteria is essential. E. coli and Klebsiella were shown to be the primary pathogens in this investigation, with E. coli predominating in the vast majority of cases [44-45]. Even though all isolates were susceptible to nitrofurantoin, there have been worries about its possible effects on developing foetuses. Cephalexin resistance was found in 88% of E. coli and Klebsiella isolates, which should worry doctors. Between populations and hospitals, antibiotic sensitivity and resistance patterns can differ greatly in terms of how susceptible and resistant bacteria are. For this reason, antibiotic-resistant bacteria may have emerged, in part due to inappropriate usage of antibiotics. As a growing international health catastrophe, antibiotic resistance is now recognised [46] and as such, is now a top priority in global health. In several parts of the world, amoxicillin and ampicillin have previously been shown to have high levels of resistance to popular frontline antibiotics. This has led to the development of guidelines for screening and diagnosing ASB, including those from the UK's National Institute for Health and Care Excellence (NICE) and the Centers for Disease Control and Prevention (CDC) in the United States [47-48].

CONCLUSION

Study concluded that frequency of asymptomatic bacteriuria in pregnant women is quite high. So, we recommend that early screening of asymptomatic bacteriuria in pregnant women should be done so that empirical therapy instead of waiting for the culture report can be given for reducing the progression of symptomatic infection during that pregnancy, chronic infection resistant to chemotherapy, pyelonephritis, low birth weight babies and preterm delivery.

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