Asymptomatic Bacteriuria in Pregnant Women

Samad Hazhir

Introduction: The aim of this study was to evaluate the frequency of bacteriuria in pregnant women referred to the medical centers of Tabriz, Iran, for prenatal care.

Materials and Methods: A total of 1100 healthy pregnant women who were referred to 50 medical centers in Tabriz for a regular prenatal care were evaluated for bacteriuria.

Results: The frequency of asymptomatic bacteriuria was 6.1%. Maternal age was lower in the women with a positive urine culture (P = .02). Asymptomatic bacteriuria had no relationship with gestational age, parity, level of education, and body mass index.

Conclusion: We found a relatively high rate of bacteriuria in our cohort of asymptomatic pregnant subjects, especially the younger ones. For prevention from the complications of the asymptomatic bacteriuria in pregnant women, such as pyelonephritis, hypertension, preeclampsia, low birth weight, prematurity, septicemia, and even maternal and neonatal death, it is recommended to perform urine culture as a routine evaluation during the pregnancy.

Keywords: bacteriuria, pregnancy, urine culture

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INTRODUCTION

Special attention to the pregnant women is one of the most important points in health care. One of the problems in pregnancy is urinary tract infection (UTI).[1,2] The prevalence of asymptomatic UTI has been reported to be 2% to 11% in pregnant women (6% to 8% in average).[3-7] Neglecting the treatment of UTI in pregnant women may result in some health and economic problems. Due to the increase in sex hormones and the anatomic and physiologic changes during pregnancy, bladder and kidney infection is more likely and may result in hypertension, preeclampsia, low birth weight, prematurity, septicemia, and maternal death.[2,4,5,8,9] It has been estimated that the costs of screening and treatment of asymptomatic bacteriuria and pyelonephritis during the pregnancy are about US$ 1605 and US$ 2864, respectively, in the United States.[4] In our country, no precise information exists about the prevalence of asymptomatic bacteriuria in pregnancy and the its treatment costs. We designed this study to evaluate the prevalence of bacteriuria in pregnant women referring to the medical centers of Tabriz, Iran.

MATERIALS AND METHODS

We designed a cross-sectional study to evaluate asymptomatic bacteriuria in pregnant women. According to the results in the previous studies on asymptomatic bacteriuria in pregnant women, a sample size of 1100 subjects was considered adequate and a total of 50 family programming and pregnancy control

Urology Department, Sina Hospital, Tabriz University of Medical Sciences, Tabriz, Iran

Corresponding Author:
Samad Hazhir, MD
No 2, Zhan Ln, Shariati St, Vali-e-Asr district, Tabriz, Iran
Tel: +98 914 115 7380
E-mail: samadhazhir@yahoo.com

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centers in Tabriz were selected for this study.[7,10-12] The study population and the sample size of each center were determined according to the proportion of the patients referring to each center. Women at any gestational age who presented for a regular prenatal care were included and those with a history of urinary tract symptoms (dysuria, frequency, and urgency, etc), pregnancy-induced diabetes mellitus or hypertension, antibiotic administration within the previous 7 days, and active regional bleeding were excluded.

The doctors and midwives in all of the 50 centers were instructed in the method of the study. They were asked to record the required information of the pregnant women and to introduce all of those without any urinary symptoms to the reference laboratory of Tabriz University of Medical Sciences. To perform urinalysis, the midstream urine samples were taken in the lithotomy position after cleaning the vestibule of the vagina. Women with more than 10^5 bacteria in each milliliter of urine were considered as the patients with bacteriuria.[13] Urine culture was carried out for this group of women to confirm the diagnosis.

Patients' demographics including age, BMI, level of education, gestational age, and parity, as well as the laboratory results, were recorded. Data were evaluated by the chi-square test and *t* test, as appropriate. A *P* value less than .05 was considered significant..

Prevalence of Asymptomatic Bacteriuria in Pregnant Women

Characteristic	Positive Urine Culture (%)	Total Number
Pregnancy trimester		
First	13 (6.7)	194
Second	32 (6.8)	473
Third	22 (5.1)	432
Age, y		
< 20	22 (9.9)	223
20 to 30	33 (4.7)	704
> 30	12 (6.9)	173
Parity		
1	18 (5.8)	313
2	32 (6.8)	469
3	13 (6.0)	216
> 3	4 (3.9)	102
BMI, kg/m^2		
< 20	3 (6.1)	49
20 to 25	30 (7.9)	382
> 25	33 (5.0)	662
Education		
Illiterate	2 (2.6)	76
Primary education	21 (7.1)	296
Secondary education	18 (6.1)	296
High School degree	25 (6.5)	387
Higher education	1 (2.3)	43
Total	67 (6.1)	1100

RESULTS

A total of 1100 pregnant women in Tabriz participated in this study. The prevalence of asymptomatic bacteriuria was 6.1%. The prevalence rates in relation to the clinical and demographic characteristics of the patients are illustrated in Table. The maternal age was significantly lower in the subjects with asymptomatic bacteriuria ($P = .02$). Asymptomatic bacteriuria did not have any significant relation with the trimester of the pregnancy ($P = .53$), parity ($P = .84$), the level of education ($P = .52$), and the BMI ($P = .17$). The mean BMI was 26.4 kg/m^2 and 26.6 kg/m^2 in the women with and without bacteriuria, respectively.

DISCUSSION

Most of the anatomic and physiologic changes in pregnancy influence the urinary tract and can result in urologic diseases and changes in kidney function which are serious threats for both the mother and the fetus. Asymptomatic bacteriuria must be treated during the pregnancy in order to prevent complications such as pyelonephritis, premature labor, hypertension, preeclampsia, and septicemia.[14]

In a study by Uncu, 270 pregnant women were evaluated and the prevalence of asymptomatic bacteriuria was reported to be 9.3%.[11] In a study performed in Turkey, 110 pregnant women were evaluated and the prevalence of asymptomatic bacteriuria was reported to be 8.1%, being more prevalent in the third trimester which is in contrast with our findings.[12] Also, in their study, the prevalence of bacteriuria was higher in women older than 25 years, while in our study, it was more prevalent in younger women. In another study, 268 women were evaluated and the need for disease detection and prevention from the pyelonephritis was emphasized.[15]

McIsaac and colleagues evaluated the urine cultures obtained from pregnant women before 20 weeks' gestation and at 28 weeks' and 36 weeks' gestation.

They found that a single urine culture before 20 weeks' gestation missed more than one-half the asymptomatic bacteriuria cases and recommended culture in each trimester to identify most cases.[7] We observed a consistent risk of bacteriuria in all 3 trimesters of the pregnancy, warranting screening program over the whole conception period. Other studies have also emphasized the necessity of screening and treatment of bacteriuria during the pregnancy period in order to prevent its dangerous complications.[1,16-19]

Studies show that urine culture is the gold standard method of diagnosis for this disease.[3,10] It is shown that urine dipstick testing for nitrites, urinalysis, and enzymatic urine screening tests can poorly detect all the culture positive bacteriuria cases in pregnant women.[3,10,20] Kutlay and colleagues[3] evaluated 406 pregnant women admitted for an initial obstetric examination during the first trimester. They performed clean-catch urine culture, microscopic urinalysis and dipstick urine tests and found that the sensitivity and specificity of microscopic urinalysis were below 75% and those for dipstick testing were about 35%. We could detect a comparable rate of bacteriuria with the findings of other studies by clean-catch urine culture.

One of the most important points of our study was the large sample size in comparison with the previous studies and evaluation of other variables including the mothers' age and its relation with the trimesters of pregnancy.[3,7,10-12,15,21] Additionally, in our study, variables including BMI, parity, and level of education were evaluated for the first time.

CONCLUSION

Bacteriuria was present in about 6.1% of the pregnant women in this study. A most sensitive test for its detection is urine culture with clean-catch sampling from the midstream urine. Regarding the frequency of asymptomatic bacteriuria in pregnant women younger than 20 years, it is recommended to perform urine culture as a part of the routine examinations of the pregnant women, and provide them with complete information about the complications of pregnancy at younger ages.

CONFLICT OF INTEREST

None declared.

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