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Original Research Article

Prevalence of Urinary Tract Infection among Pregnant Women and Its Risk Factor in Derna City

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Abstract

Background: Urinary tract infection (UTI) is one of the most widely spread and costly medical complications of pregnancy, occurring in nearly 20% of all pregnancies. ***Aim:*** The purpose of this study was to estimate the prevalence of UTI among pregnant women and risk factors in Derna city during 2017 – 2018. ***Results:*** A total of 140 pregnant women were recruited in this study. The mean age of pregnant women was 28.24±5.6 ranges from 17 to 49 years old. The prevalence of urine tract infection was 49.3% (69 of 140), 66 (47.1 %) of them had urine tract infection symptoms. More than half of the women were in second trimester (53.6%), 70% were multi-gravid and 55% had previous history of urine tract infection. A total of six bacteria species were isolated and identified, Staphylococcus aureus was more frequently isolated (55.9%), following by E. Coli (17.6). ***Conclusion:*** Urine tract infection is commonly encountered in pregnant women, Regular antenatal care including routine urine testing at every visit to detect and treat asymptomatic bacteriuria is recommended. Patients should be taught proper urine sampling techniques of clean catch mid stream urine. Positive samples should be sent for sensitivity and appropriate antibiotic use according to tested sensitivities.

Keywords: Urinary tract infection (UTI), pregnancy, Staphylococcus.

INTRODUCTION

Urinary tract infection (UTI) is one of the most widely spread and costly medical complications of pregnancy, occurring in nearly 20% of all pregnancies. They are also accountable for 10% of all hospital admissions during pregnancy [1, 2, 3]. UTIs are the second common complications in pregnant women, which if untreated can adversely affect the health of infant or the pregnant mother [4]. Urinary tract infections are defined by microbial colonization or inflammation of the bladder, urethra, or renal pelvis and kidneys.

Urinary tract infections are the most prevalent bacterial infections encountered during pregnancy. Urinary tract infections in pregnancy are classified as either asymptomatic or symptomatic. Asymptomatic bacteruria is defined as the persistent presence of bacteria within the urinary tract of women who have no symptoms. Symptomatic urinary tract infections are divided into lower tract (acute cystitis) or upper tract (acute pyelonephritis) infections [5, 6].

Women with a history of UTIs are at increased risk of having a UTI during pregnancy. Other risk factors for UTIs during pregnancy include increased parity or age, and lack of prenatal care, urinary tract abnormalities, lack of adequate fluid intake, sickle cell trait, anaemia, and diabetes mellitus. [7].

Although the incidence of bacteriuria in pregnant women is similar to that in non-pregnant women the incidence of acute pyelonephritis in pregnant women with bacteriuria is significantly increased [8]. The anatomical and physiological changes that occur during pregnancy increase the

susceptibility to urinary tract infection. Ureteric smooth muscle relaxation caused by progesterone hormone may predispose to upper urinary tract dilation. Bladder displacement superiorly and anteriorly by the growing uterus can also, lead to impaired bladder emptying, thereby stasis of urine as well as the increased urinary glucose and amino acids concentration during pregnancy increase prevalence of UTI. These changes alongside an already short urethra (3-4cm in females) increase the prevalence of urinary tract infection during pregnancy [9,10].

Most frequent pathogen detected is the Enterobacteriaceae family of bacteria, causing 84.3% of the urinary tract infections [11]. The organisms causing UTIs during pregnancy are the same as those found in non-pregnant patients *E. coli* accounts for 80% - 90% infections[12]. Screening for and treatment of asymptomatic bacteriuria in pregnancy has become standard obstetric practice [13].

OBJECTIVE

The purpose of this study was to estimate the prevalence of UTI among pregnant women and its risk factor in Derna city during 2017–2018.

METHODS

A cross-sectional face-to-face interview was used to gather data from 1stDecember 2017 to 30 October 2018. All pregnant women attending the antenatal clinic in the AL-Najah clinic and Zahrat AL-Hayat clinic (Private Clinic) in Derna city, Libya were enrolled in the study. Patients enrolled in this study attended antenatal clinic at least 3 times during the pregnancy for clinical examination and routine medical tests each trimester including urine testing. Data was collected from pregnant women by questionnaires administered by the researcher. Information on the questionnaire included socio-demographic characteristics such as age, occupation and educational status obstetric history and medical factors.

Statistical analysis

Data analysis was performed using SPSS software version 24. Descriptive statistics, including percentage, mean, range, and standard deviations, were calculated for all variables. Proportions were compared using Chi- square tests and *P*-value less than 0.05 was considered statistically significant.

RESULTS

A total of 140 pregnant women were recruited in this study. The mean age of pregnant women was 28.24±5.6 ranges from 17 to 49 years old. The majority of pregnant women in this study have university degree (65.7%). Based on family income 72.9% of pregnant women were in middle class level (Table 1). The prevalence of urine tract infection was 49.3% (69 of 140), 66 (47.1 %) of them have urine tract infection symptoms (Figure 1).

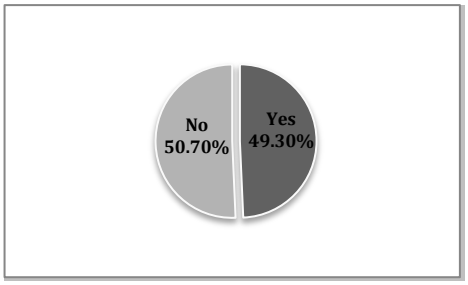

Fig-1: Prevalence of urine tract infection

Table (2) shows obstetrics and medical factors of pregnant women included in the study, more than half of women were in second trimester (53.6%). Moreover, 70% were multiple gravidae and 55% had history of urine tract infection. There were no association between demographic characteristics and urine tract infection (Table 3).

There was higher rate of infection in second trimester (53.6%) and first trimester (34.8%). However, there was no association between gestational age and urine tract infection. There was a higher frequency of infection in those having 0-1 children and 55.1% among primary gravid, with significant relationship (X^2=14, *P*=0.00).

Assessing the risk of recurrence, past history of urine tract infection was important risk factor as (72.5%) of women had past history with significant relationship (X^2=16.76, *P*=0.00) (Table 4).

However, 33 of 69 reported vaginal discharge or urine tract infection symptoms including vomiting, dysuria, fever and frequency of micturition (Table 5).

A total of six bacteria species were isolated and identified, Staphylococcus aureus were more frequently isolated (55.9%), following by E. Coli (17.6) and S. saprophyticus (14.7) (Table 6).

The isolates showed no resistance to most of antibiotics used. The most antibiotics used were Ampicillin, Ciprofloxacin, Gentamicin, Tetracycline and Augmentin.

Table-1: Demographic characteristics of pregnant women (n=140)

Age	**No**	**%**
15-24	47	33.6
25-34	77	55.0
35-44	13	9.3
≥45	3	2.1
Education Level		
Primary level	8	5.7
Secondary level	40	28.6
University degree	92	65.7
Occupation		
Housewife	78	55.7
Employee	62	44.3
Family Income		
High	3	2.1
Middle	162	72.9
Low	35	25.0
Source of water		
Tap	73	52.1
Bottle	39	27.9
Well	7	5.0
Mix	21	15

Table-2: Obstetrics and Medical Factors (n=140)

	No	**%**
Parity		
0-1	87	62.1
2-3	40	28.6
≥4	13	9.3
Gravidae		
Primary gravidae	42	30
Multiple gravidae	98	70
Abortion		
Yes	24	17.1
No	110	82.9
Gestational age		
1st trimester	40	28.6
2nd trimester	75	53.6
3rd trimester	25	17.9
Past history of UTI		
Present	77	55
Absence	63	45

Table-3: Prevalence of urine tract infection and demographic characteristics of pregnant women

	No (%)	**Prevalence of UTI**	**X^2**	**P=value**
Age				
15-24	47(33.6)	25(36.2)		
25-34	77(55.0)	40(58)	4.38	0.22
35-44	13(9.3)	3(4.3)		
≥45	3(2.1)	1(1.4)		
Education Level				
Primary level	8(5.7)	4(5.8)		
Secondary level	40(28.6)	20(29)	0.015	0.99
University degree	92(65.7)	45(65.2)		
Occupation				
Housewife	78(55.7)	38(55.1)		
Employee	62(44.3)	31(44.9)	0.23	0.50
Family Income				
High	3(2.1)	0(0)		
Middle	162 (72.9)	49(71.0)	3.84	0.146
Low	35(25.0)	20(29)		
Source of water				
Tap	73(52.1)	28(40.6)		
Bottle	39(27.9)	22(31.9)	8.14	0.042
Wall	7(5.0)	5(7.2)		
Mix	21(15)	14(20.3)		

Table-4: The prevalence of urine tract infection according to obstetrics and medical factors

	No (%)	**Prevalence of UTI**	***X^2***	***P-value***
Parity				
0-1	87(62.1)	39(56.5)	1.8	0.391
2-3	40(28.6)	23(33.3)		
≥4	13(9.3)	7(10.1)		
Gravidae				
Primary gravidae	42(30)	38(55.1)	14.4	0.00
Multiple gravidae	98(70)	31(44.9)		
Abortion				
Yes	24(17.1)	12(17.4)	0.660	0.558
No	110(82.9)	57(82.6)		
Gestational age				
1st trimester	40(28.6)	24(34.8)	4.826	0.090
2nd trimester	75(53.6)	37(53.6)		
3rd trimester	25(17.9)	6(11.6)		
Past history of UTI				
Present	77(55)	50(72.5)	16.76	0.000
Absence	63(45)	19(27.5)		

Table-5: Common symptoms of urine tract infection

	No	%
Dysuria	6	18.1
Fever	6	18.1
Vomiting	5	15.1
Suprapubic pain	4	12.1
Frequency of nitration	4	12.1
Nausea	3	0.09
Chills	1	0.03

Table-6: Number and percentage of bacteria isolated from pregnant women with urine tract infection

Isolated bacteria	No	%
Staphylococcus aureus	19	55.9
Escherichia Coli	6	17.7
S.saprophyticus	5	14.7
Enterococcus faecali	2	5.9

DISCUSSION

Infection of the urinary tract (UTI) represents the most common medical complication of pregnancy and ranges from asymptomatic bacteruria to pyelonephritis. Pregnant women are at greater risk of UTIs, particularly because of the physiologic and anatomic changes that occur in normal pregnancy.

The present study was conducted to determine the risk factors of urinary tract infection among pregnant women in Derna city. A descriptive cross-sectional study was carried out on 140 pregnant women attending the antenatal care clinics at selected private clinics in Derna city. The overall prevalence of UTI among pregnant women in this study was 49.3%. This is higher than the prevalence of UTI 19.8% among pregnant women referring to Karaj health centers, Iran in 2013[14]. This may be due to lack of drinking water, lacked awareness of health care.

Also, Tamalli *et al*. (2013) [15] reported UTI prevalence rate of less than one third among the pregnant women in Libya at Alkhoms City. On the other hand the prevalence was higher in Abakaliki Metropolis, Nigeria where nearly half of the pregnant women had UTI [16].

In our study no demographic factors were shown to be in associated with UTI among these pregnant women. These include age, level of education, socioeconomic status and occupation. UTI is more primigravidae than multiparae, previous history of UTI increases the chance by 50%in multiparae than primigravidae. This study also shows that 70% of women who had UTI were in their 2nd trimester of their pregnancy. Our results are almost comparable to the results reported by Okonko 2009 [17].

Also, this study found the most common symptoms was dysuria and fever similar to a cross sectional study conducted at Khartoum north teaching hospital Antenatal Care Clinic[18]. It was also observed that staphylococcus aureus bacterium was the most frequently isolated organism and represents poor sampling techniques. This result agrees with studies in Egypt at Zagazig University Hospital by Dimetry *et al*. (2007)[19].

CONCLUSION

Urine tract infection is commonly encountered in pregnant women, Regular antenatal care including routine urine testing at every visit to detect and treat asymptomatic bacteriuria is recommended practice. Patients should be taught proper urine sampling techniques of clean catch mid stream urine. Positive samples should be sent for sensitivity and appropriate antibiotic use ensures better outcome for both mother and baby

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