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Research Article

**FINDING OF ORGANISMS CAUSING BACTERIURIA IN  
PREGNANT WOMEN**Dr Aneela Ishaq<sup>1</sup>, Dr Saif ullah<sup>2</sup>, Dr Mahnoor Fatima<sup>3</sup><sup>1</sup>Rawalpindi Medical University<sup>2</sup>Hebei North University, China<sup>3</sup>Shaheed Zulfiqar Ali Bhutto Medical University**Article Received:** August 2020**Accepted:** September 2020**Published:** October 2020**Abstract:**

**Background and objectives:** Asymptomatic bacteriuria refers to the presence of bacteria in urine. It 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 urinary tract infection (UTI). The main objective of the study is to analyse the organisms causing bacteriuria in pregnant women. **Material and methods:** This descriptive study was conducted in Rawalpindi Medical University during March 2019 to March 2020. The data was collected from 100 pregnant women to find the organisms causing bacteriuria. Clean-catch midstream urine was collected from each patient into a sterile universal container. Samples were cultured on dried plates of blood agar and cysteine lactose electrolyte deficient agar (CLED), using a calibrated drop delivering 0.002ml of urine. **Results:** The data was collected from 100 pregnant females. There was a significant difference in the prevalence of asymptomatic bacteriuria with respect to age ( $P < 0.001$ ). However, there was no significant difference with respect to trimester ( $P = 0.2006$ ). The prevalence of uropathogens showed Escherichia coli as the most predominant organism. This was closely followed by Staphylococcus aureus. **Conclusion:** It is concluded that UTI in pregnancy may have serious consequences for both the mother and the child. The most predominant organisms were Escherichia coli and Staphylococcus aureus for bacteriuria among pregnant women.

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**INTRODUCTION:**

Asymptomatic bacteriuria refers to the presence of bacteria in urine. It 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 urinary tract infection (UTI). 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 [1]. The physiological increase in plasma volume during pregnancy decrease urine concentration and up to 70% pregnant women develop glucosuria, which encourages bacterial growth in the urine [2].

Pregnancy enhances the progression from asymptomatic to symptomatic bacteriuria which could lead to pyelonephritis and adverse obstetric outcomes such as prematurity, low birth weight and higher foetal mortality rates [3]. The adverse effects of undiagnosed asymptomatic bacteriuria on mother and child have made researchers to suggest routine culture screening for all pregnant women attending antenatal clinic in order to prevent mother and child from any form of complication that may arise due to infection [4].

Urinary tract infections are common during pregnancy, and the most common causative organism is *Escherichia coli*. Asymptomatic bacteriuria can lead to the development of cystitis or pyelonephritis. All pregnant women should be screened for bacteriuria and subsequently treated with antibiotics such as nitrofurantoin, sulfisoxazole or cephalexin. Ampicillin should no longer be used in the treatment of asymptomatic bacteriuria because of high rates of resistance [5]. Pyelonephritis can be a life-threatening illness, with increased risk of perinatal and neonatal morbidity. Recurrent infections are common during pregnancy and require prophylactic treatment. Pregnant women with urinary group B streptococcal infection should be treated and should receive intrapartum prophylactic therapy [6].

The main objective of the study is to analyse the organisms causing bacteriuria in pregnant women.

**MATERIAL AND METHODS:**

This descriptive study was conducted in Rawalpindi Medical University during March 2019 to March 2020. The data was collected from 100 pregnant women to find the organisms causing bacteriuria. Clean-catch midstream urine was collected from each patient into a sterile universal container. Samples were cultured on dried plates of blood agar and cysteine lactose electrolyte deficient agar (CLED), using a calibrated drop delivering 0.002ml of urine. Plates were incubated aerobically of 37°C overnight. Colony counts yielding bacterial growth of  $10^5$ /ml or more of pure isolates were regarded as significant for infection. Similarly, 10ml of each patient urine was transferred into sterile centrifuge tubes and then centrifuged at 3000rpm for 10-15 minutes. The supernatant was discarded and the deposit examined microscopically at high magnification for pus cells, red blood cells, epithelial cells, casts, crystals, yeast-like cells and *Trichomonas vaginalis*. Pus cells > 5 per high power field were also considered significant for infection.

The data was analysed using SPSS 19. All the values were expressed in mean and standard deviation.

**RESULTS:**

The data was collected from 100 pregnant females. There was a significant difference in the prevalence of asymptomatic bacteriuria with respect to age ( $P < 0.001$ ). However, there was no significant difference with respect to trimester ( $P = 0.2006$ ). The prevalence of uropathogens showed *Escherichia coli* as the most predominant organism. This was closely followed by *Staphylococcus aureus*. The overall antimicrobial susceptibility pattern showed Ciprofloxacin to be the most effective antibiotic. This was followed by Ceftriaxone and Augmentin.

**Table 01:** Prevalence of uropathogens

Organism	% age
E-Coli	29.1
Proteus species	4.5
Citrobacter species	3.6
Providencia species	7.1
Candida	8.9
Pseudomonas	1.1
Klebsiella species	2.3

**Table 02:** Antimicrobial susceptibility pattern of bacteria isolates

Bacteria	No. (%) susceptible to								
	No. tested	AMP	CLX	ERY	F	GEN	AUG	CRO	CIP
<i>Escherichia coli</i>	180	4(2.2)	8(4.4)	8(4.4)	85(47.2)	102(56.7)	131(72.8)	142(78.9)	156(86.7)
<i>Staphylococcus aureus</i>	162	2(1.2)	5(3.1)	6(3.7)	71(43.8)	88(54.3)	112(69.1)	128(79.0)	140(86.4)
<i>Klebsiella species</i>	79	4(5.1)	9(11.4)	8(10.1)	43(54.4)	56(70.9)	64(81.0)	69(87.3)	71(89.9)
<i>Proteus species</i>	58	3(5.2)	7(12.1)	8(13.8)	35(60.3)	38(65.5)	41(70.7)	46(79.3)	49(84.5)
<i>Citrobacter species</i>	41	2(4.9)	5(12.2)	5(12.2)	22(53.7)	20(48.8)	27(65.9)	30(73.2)	35(85.4)
<i>Providencia species</i>	37	2(5.4)	4(10.8)	3(8.1)	12(32.4)	21(56.8)	25(67.6)	28(75.7)	31(83.8)
<i>Pseudomonas aeruginosa</i>	29	0(0.0)	0(0.0)	0(0.0)	11(37.9)	13(44.8)	16(55.2)	17(58.6)	19(65.5)
<b>Total</b>	<b>586</b>	<b>17(2.9)</b>	<b>38(6.5)</b>	<b>38(6.5)</b>	<b>279(47.6)</b>	<b>338(57.7)</b>	<b>416(71.0)</b>	<b>460(78.5)</b>	<b>501(85.5)</b>

AMP = Ampicillin, CLX = Cloxacillin, ERY = Erythromycin, F = Nitrofurantoin, GEN = Gentamicin, AUG = Augmentin, CRO = Ceftriaxone, CIP = Ciprofloxacin.

**Ref:** Imade, P. E., Izeke, P. E., Eghafona, N. O., Enabulele, O. I., & Ophori, E. (2010). Asymptomatic bacteriuria among pregnant women. *North American journal of medical sciences*, 2(6), 263–266. <https://doi.org/10.4297/najms.2010.2263>

## DISCUSSION:

In general, treatment of pregnant patients with acute cystitis is initiated before the results of the culture are available. Antibiotic choice, as in asymptomatic bacteriuria, should focus on coverage of the common pathogens and can be changed after the organism is identified and sensitivities are determined [7]. A three-day treatment course in nonpregnant patients with acute cystitis has a cure rate similar to a treatment course of seven to 10 days, but this finding has not been studied in the obstetric population. Patients treated for a shorter time frame are more likely to have a recurrence of the infection. In the pregnant patient, this higher rate of recurrence with shorter treatment periods may have serious consequences [8].

UTIs during pregnancy are a common cause of serious maternal and perinatal morbidity; with appropriate screening and treatment, this morbidity can be limited. A UTI may manifest as asymptomatic bacteriuria, acute cystitis or pyelonephritis [9]. All pregnant women should be screened for bacteriuria and subsequently treated with appropriate antibiotic therapy. Acute cystitis and pyelonephritis should be aggressively treated during pregnancy. Oral nitrofurantoin and cephalexin are good antibiotic choices for treatment in pregnant women with asymptomatic bacteriuria and acute cystitis, but parenteral antibiotic therapy may be required in women with pyelonephritis [10].

## CONCLUSION:

It is concluded that UTI in pregnancy may have serious consequences for both the mother and the child. The most predominant organisms

were *Escherichia coli* and *Staphylococcus aureus* for bacteriuria among pregnant women.

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