

ORIGINAL ARTICLE**Assessment of Bacterial Isolates in Urinary Tract Infection among Pregnant Women- A Microbiological Study**

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ABSTRACT:

Introduction- A urinary tract infection (UTI) is an infection that affects part of the urinary tract. The present study was conducted to determine the bacterial isolates of UTI in pregnancy. **Materials & Methods-** The present study was conducted on 250 antenatal women between 12-16 weeks of gestation from different age & parity groups. All patients were instructed to collect clean catch mid-stream urine specimen. Each of the specimens was subjected to culture by the semi-quantitative standard loop technique on Blood agar & MacConkey agar. Culture plates were incubated aerobically at 37°C for 24 hours. **Results-** Age group 18- 25 years had 135 patients, 26- 33 years had 68 patients, 34- 41 years had 35 patients and 41- 50 years had 12 patients. The difference was significant (P- 0.01). Parity was primi (80), first para (75), second para (45) and multiparous (50). The difference was significant (P- 0.01). Various pathogenic isolates were staph. aureus (32%), E. coli (30%), Streptococcus spp. (22%), pseudomonas spp. (4%), candida spp. (3%) and acinobacter spp. (2%). The difference was significant (P- 0.01). **Conclusion-** UTI is quite common in pregnancy. Common isolates seen are staph. aureus, E. coli, Streptococcus spp., pseudomonas spp., candida spp. and acinobacter spp.

Key words- Bacteria, Escherichia coli, Streptococcus.

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This article may be cited as: Singh RN. Assessment of Bacterial Isolates in Urinary Tract Infection among Pregnant Women- A Microbiological Study. J Adv Med Dent Scie Res 2017;5(11):143-145.

INTRODUCTION

A urinary tract infection (UTI) is an infection that affects part of the urinary tract. When it affects the lower urinary tract it is known as a bladder infection and when it affects the upper urinary tract it is known as kidney infection. Symptoms from a lower urinary tract include pain with urination, frequent urination, and feeling the need to urinate despite having an empty bladder.¹

The urinary tract infections (UTI) are the commonly associated with pregnancy. Asymptomatic UTI develops in 2-12% of pregnancy and it's a major predisposition to the development of pyelonephritis associated with complications like preterm labour and low birth weight baby. In asymptomatic bacteriuria (ASB) there is presence of minimum 10⁵ colony forming units (CFU) per ml of urine, of a single uro-pathogen in a midstream urine without symptoms and signs such as dysuria, frequency of micturition, fever, loin pains, renal angle tenderness, suprapubic pain and tenderness.²

Those who have bacteria in the urine but no symptoms should not generally be treated with antibiotics. This includes those who are old, those with spinal cord injuries, and those who have urinary catheters. Pregnancy is an exception and it is recommended that women take 7 days of antibiotics. If not treated it causes up to 30% of mothers to develop pyelonephritis and increases risk of low birth weight and preterm birth. Some also support treatment of those with diabetes mellitus and treatment before urinary tract procedures which will likely cause bleeding.³

Organisms that causing UTI are those from the vaginal, perineal, fecal flora and gastro-intestinal tract. They include Escherichia coli, Staphylococcus aureus, Pseudomonas species, Proteus mirabilis, Klebsiella species, and Streptococcus species amongst others.⁴ The present study was conducted to determine the bacterial isolates UTI in pregnancy.

MATERIALS & METHODS

The present study was conducted in the department of microbiology. It included 250 antenatal women between 12-16 weeks of gestation from different age & parity groups. All were informed regarding the study and written consent was obtained. Ethical clearance was taken from institutional ethical committee.

All patients were instructed to collect clean catch mid-stream urine specimen. Each of the specimens was subjected to culture by the semi-quantitative standard loop technique on Blood agar & MacConkey agar. With 4mm internal diameter loop urine culture is done. Culture plates were incubated aerobically at 37°C for 24 hours. Culture plates without visible growth were further incubated for additional 24 hours before being discarded. Colony count of 100 or more equals to $\geq 10^5$ CFU/ML & considered as significant bacteriuria. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

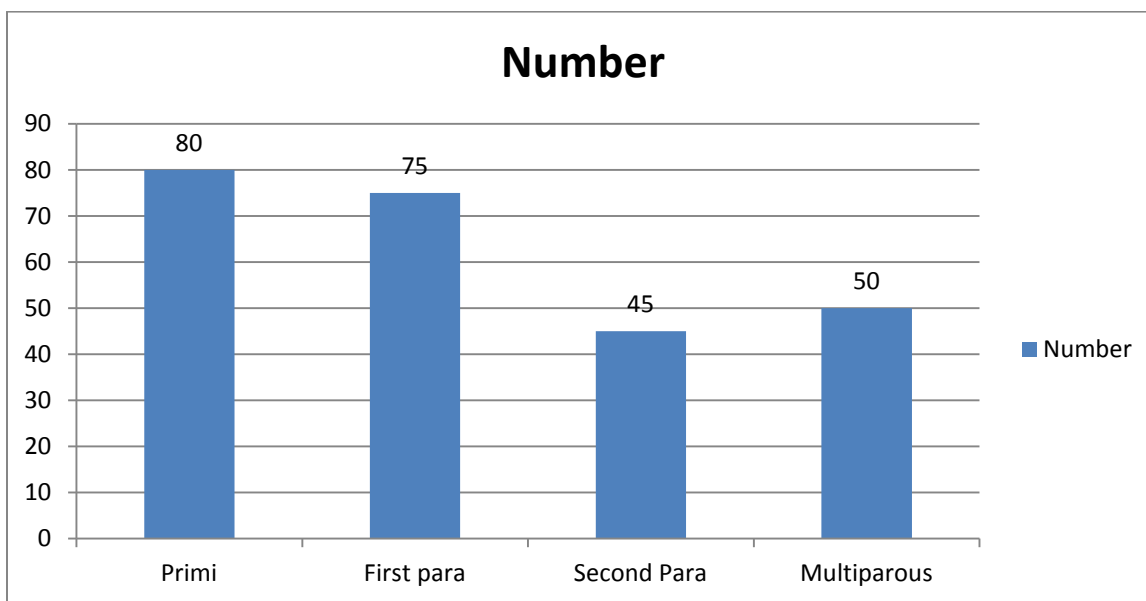
RESULTS

Table I Age wise distribution of patients

Age group (years)	Number	P value
18-25	135	0.01
26-33	68	
34-41	35	
41-50	12	

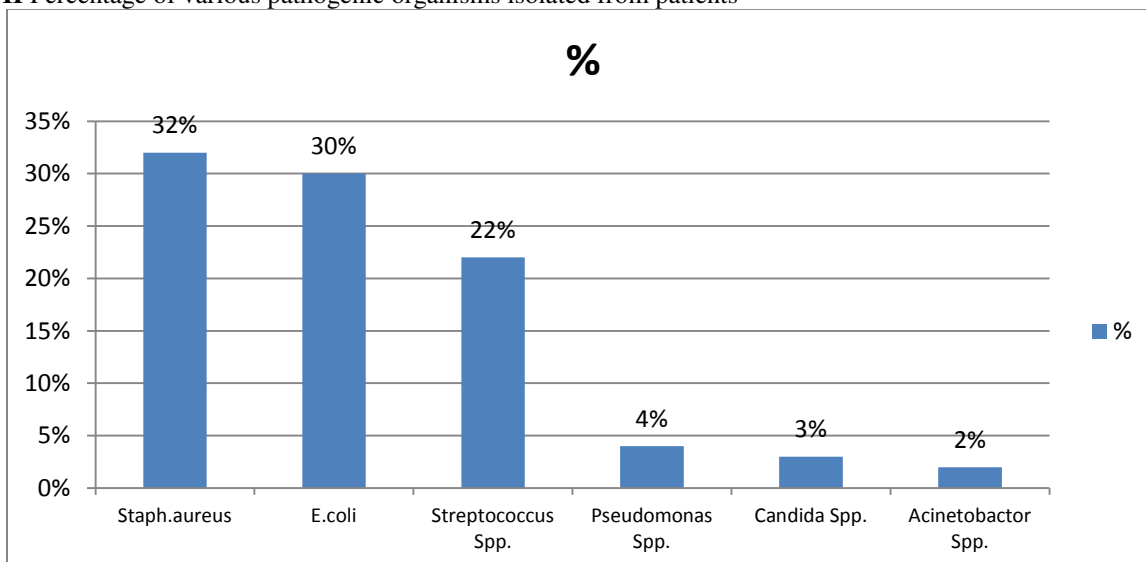
Table I shows that age group 18- 25 years had 135 patients, 26- 33 years had 68 patients, 34- 41 years had 35 patients and 41- 50 years had 12 patients. The difference was significant (P- 0.01).

Graph I Parity and bacteriuria



Graph I shows that parity was primi (80), first para (75), second para (45) and multiparous (50). The difference was significant (P- 0.01).

Graph II Percentage of various pathogenic organisms isolated from patients



Graph II shows that various pathogenic isolates were staph. aureus (32%), E. coli (30%), Streptococcus spp. (22%), pseudomonas spp. (4%), candida spp. (3%) and acinobacter spp. (2%). The difference was significant (P- 0.01).

DISCUSSION

Urinary tract infections are the most frequent bacterial infection in women. They occur most frequently between the ages of 16 and 35 years, with 10% of women getting an infection yearly and more than 40–60% having an infection at some point in their lives. Recurrences are common, with nearly half of people getting a second infection within a year. Urinary tract infections occur four times more frequently in females than males. Pyelonephritis occurs between 20–30 times less frequently.⁵

Risk of UTI were higher in pregnant women mainly because of altered position of the urinary tract and altered level of hormone during pregnancy which facilitate bacteria to move towards the urethra to the kidney and lead to the development of UTI both symptomatic as well as asymptomatic UTI. Early diagnosis of suspected organism and antibiotic treatment is required because UTI can cause serious complications in mother and baby, if proper treatment is not done in time. Women showing Positive Urine culture should be treated by proper identification of suspected organism with proper antibiotics to decrease maternal well as fetal morbidities.⁶

In our study, age group 18- 25 years had 135 patients, 26-33 years had 68 patients, 34- 41 years had 35 patients and 41- 50 years had 12 patients. This is similar to Ayanet et al.⁷ Parity was primi (80), first para (75), second para (45) and multiparous (50). We found that various pathogenic isolates were staph. aureus (32%), E. coli (30%), Streptococcus spp. (22%), pseudomonas spp. (4%), candida spp. (3%) and acinobacter spp. (2%). This is in agreement with Sabrina et al.⁸ In a study by Hetal et al⁹, a total of 501 pregnant women without symptoms of Urinary tract infection were enrolled. Organisms were identified from Midstream urine specimen and antibiotic susceptibility test was performed using bacteriological standard tests. Out of 501 pregnant women 60 (11.97%) were culture positive. Multiparous women had highest percentage of culture positivity of 26.92%. Staph. aureus was the predominant organism isolated and E.coli was 2nd most common organism isolated. There were also Pseudomonas Spp., Streptococcus Spp., Proteus mirabilis, Acinetobacter Spp., Enterococcus Spp., Klebsiella Spp., and Candida Spp.

Urinary tract infections are more concerning in pregnancy due to the increased risk of kidney infections. During pregnancy, high progesterone levels elevate the risk of decreased muscle tone of the ureters and bladder, which leads to a greater likelihood of reflux, where urine flows back up the ureters and towards the kidneys. While pregnant women do not have an increased risk of

asymptomatic bacteriuria, if bacteriuria is present they do have a 25–40% risk of a kidney infection.¹⁰ Thus if urine testing shows signs of an infection even in the absence of symptoms, treatment is recommended.

CONCLUSION

UTI is quite common in pregnancy. Common isolates seen are staph. aureus, E. coli, Streptococcus spp., pseudomonas spp., candida spp. and acinobacter spp.

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Source of support: Nil

Conflict of interest: None declared

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