INTRODUCTION

Urinary tract infection (UTI) is one of the most common medical complications of pregnancy. UTI refers to both microbial colonization of the urine and tissue invasion of the urinary tract. Bacteria are most commonly responsible for infection although yeast and viruses may also be involved. Hence, the present study aims to determine the microbial profile in asymptomatic bacteriuria and antimicrobial susceptibility from isolated organisms among antenatal women. This was a prospective study conducted in the Departments of Microbiology in Sri Lakshmi Narayana Medical College & Hospital Pondicherry, over a period of 2 months. A total number of 100 samples were collected from antenatal women of all trimesters attending the OBG ward. Mid-stream urine samples were processed within 1-2 hours of collection, using standard microbiological procedures. In these 100 samples, 17 cases were culture positive, 26 samples showed insignificant growth, 52 samples showed no growth, and 5 samples showed mixed growth. In 17 cases, the maximum number of positive culture seen during second trimester of pregnancy. Escherichia coli was the most common organism in our study followed by others. Hence, appropriate antibiotic treatment should be given to prevent pyelonephritis, low birth weight and preterm delivery, it is beneficial for both mother and foetus.

Keywords: Asymptomatic bacteriuria, UTI, Pregnant women.
bacteriuria and to analyse drug susceptibility and resistance pattern of the isolated microorganism.

**MATERIALS AND METHODS**

This was a prospective study which was conducted in the department of Microbiology & Department of Obstetrics in Sri Lakshmi Narayana Medical College & Hospital Pondicherry, over a period of 2 months from 1st June to July 2014.

**Sample Size:** A total number of 100 pregnant women who attended antenatal clinic were included (all trimester) in this study.

**Exclusion criteria:** Pregnant women with history of UTI (dysuria, frequency and urgency), a history of antibiotic therapy taken in the previous two weeks, pregnancy induced diabetes mellitus/hypertension, fever and known congenital anomalies of urinary tract were excluded from this study.

The study and data collection was done with the approval from the institutional ethical Committee. Informed consent was taken from the patients. Antenatal women were counseled regarding the collection of clean catched mid stream urine sample in a sterile wide mouthed container that can be covered with a tightly fitted lid. Microscopic examination of a wet film of centrifuged urine was carried out to detect the presence of the pus cells, erythrocytes, micro-organisms, casts etc.

The urine samples were processed within 1-2hrs of collection, using standard microbiological procedures. The culture was done on 5% sheep blood agar and Mac-Conkey agar by standard loop method and incubated at 37°C for 24hours. Prolonged incubation was done for further 24hrs if no growth obtained. The identification of organisms was done by Gram staining, motility test, catalase test, oxidase test, coagulase test, and routine biochemical tests as per Cowan and Steels Manual.9

The growth was interpreted as sterile if no growth obtained. It was interpreted as Significant if the number of colonies corresponded to 10^5 colony forming units (CFU) per ml. Insignificant growth was reported if colony count was less than 10^5 CFU per ml.

The standardized Kirby-Bauer disc diffusion method on Muller Hinton agar plate as per recommendations of NCCLS (CLSI) was used for antibiotic sensitivity testing. The antibiotics tested were Amikacin (30mcg), Gentamicin (10mcg), Nitrofurantoin (300mcg), Ceftazidime (30mcg), Amoxycillinclavulanicacid(30mcg), Cefepime (30mcg), Ceft trimoxazole (25mcg) and Ceftazidime-clavulanic acid (30/10mcg). All antenatal women with significant bacteriuria were advised to take antibiotics.

**RESULTS**

Out of 100 pregnant woman examined for asymptomatic bacteriuria, of these 17 cases were culture positive. Of 17 cases the highest number of culture positive cases were in the age group of 26-35years (59%) followed by 18-25 years (35%) and >36years (6%) [Table 1].

52 samples were sterile with no growth, insignificant bacteriuria in 26 cases and Mixed growth were seen in 5 cases, which is not included in significant bacteriuria [Table 2].

In present study maximum number of culture positive cases were noted in second trimester (52.9%) followed by others [Table 3]. The commonest isolated organism was E.coli (35.2%) followed by others [Table 4].

**DISCUSSION**

Asymptomatic bacteriuria defined as true bacteria in the absence of specific symptoms of acute urinary tract infection. It occurs in 2-10% of all pregnancy. In recent studies the prevalence of asymptomatic bacteriuria was reported to be as high as 86.6% in a population from Nigeria and included Staphylococcus aureus as uropathogen.

Stenqvist et al reported the causative species and their virulence factors are similar in both pregnant and non-pregnant women and the basic mechanism of bacterial entry into the urinary tract is also same. Kaitz et al (1961) reported asymptomatic bacteriuria develops within the first month of
pregnancy and frequently reduces the ability of the kidney to concentrate the urine. Many authors have suggested that the smooth muscle relaxation and urethral dilation facilitates the ascent of bacteria from urinary bladder to the kidney results in bacteriuria during pregnancy and it has greater progress. Risk of developing pyelonephritis is 20 to 30 folds higher in pregnant women with asymptomatic bacteriuria10. E.coli is one of the most common pathogen associated with asymptomatic bacteriuria. It represents 80% of isolates. As per the study of Stenqvist 1987; Eisenstein 1988 uropathogenic bacteria posses specific virulence factors that enhance both invasion and colonization of UTI (i.e) P-fimbriae of certain strains of E.coli. In case of asymptomatic bacteriuria,Nicolle et al reported that two consecutive midstream urine sample with isolation of 10^5 CFU/ml is significant with a single bacterial strain or >10^2 CFU/ml is significant in single catheterized urine sample with single bacterial strain. Hooton et al stated that only one voided urine specimen is obtained and treatment is usually commenced in women with asymptomatic bacteria without a confirmatory repeat culture11. Lin and Fajardo stipulated that screening for asymptomatic bacteriuria should be taken during the first prenatal visit or between 12 to 16 weeks of pregnancy. Hooton et al reported that rescreening for bacteriuria could be considered in women with haemoglobinS, during preterm labour and urinary tract abnormalities12,13. Smaaí 2009 et al found that a rate of 30% of asymptomatic bacteriuria is a risk factor for development of pyelonephritis14. In this study, the prevalence of Asymptomatic bacteriuria was 17% which was similar to other studies varied between 8.4-18.2%(Lavanya and Jogalakshmi 2002,Oli et al 2010, Turipin et al 2005, Enayat et al 2008). This could be due to poor genital hygiene practice by a pregnant woman, who may find it difficult to clean their anus after defecating and genitals after passing urine.

Antenatal woman in age group 26-35years had a highest percentage of culture positive (59.00%). Similar age pattern was observed in other studies Enayat, K et al, Akinloye O et al. This reason may be due to multiparous and multiparity risk factors for the development of UTI(i.e) Pufimbriae of certain isolates were more sensitive to Ceftzidime, Nitrofurantoin, Amikacin, cefotaxime drugs are relatively safe in pregnancy and effective against UTI. P. Mirtal et al found pre-eclamptic toxemia was more common in bacteriuria group only (9.1%). As compared to abacteriuric group (6%)17.

All antenatal women with a significant bacteruria were advised to take appropriate antibiotics which prevent local antimicrobial resistant patterns that will aid physicians in the successful empirical treatment of the infection.

CONCLUSION

Significant bacteriuria was present in 17% in our study. The sensitive test for detection of asymptomatic bacteriuria is urine culture with clean catch mid stream urine. Asymptomatic bacteriuria during pregnancy could be reduced by antimicrobial treatment in earliest stage. Therefore, routine antenatal checkup which tends to prevent any obstetric complications in association with pregnancy. Hence, appropriate treatment should be given to safe the motherhood and new born health.

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