Incidence of Asymptomatic Bacteriuria in Pregnant Women

ABSTRACT

BACKGROUND - Asymptomatic bacteriuria is the presence of bacteria in the properly collected urine of a patient that has no signs and symptoms of urinary tract infection.

AIM - This study was carried out to determine the incidence of asymptomatic bacteriuria in pregnant women in Saveetha medical college, Thandalam, Tamil Nadu.

MATERIALS AND METHODS - A total of 250 pregnant women attending antenatal clinic at civil hospital, Saveetha medical college, over a period of 3 months, with age groups between 18 to 30 years agreed to enter the study and were clinically evaluated. All these women were asked to submit clean catch midstream urine samples and it was examined under the microscope and by culture method.

RESULT - A total of 250 pregnant women included in our study, with varying age groups between 18 to 30 years and the highest incidence was seen in between the 26 to 30 age group. Asymptomatic bacteriuria was seen in 27.2% of the pregnant women. The prevalence of Escherichia coli was among the most dominant organism, followed by Staphylococcus aureus ,klebsiella and proteus species.

CONCLUSION - The study showed 27.2% of the pregnant women to have asymptomatic bacteriuria. This can be reduced by screening the mothers in first trimester and routine urine culture test must be carried out.

INTRODUCTION

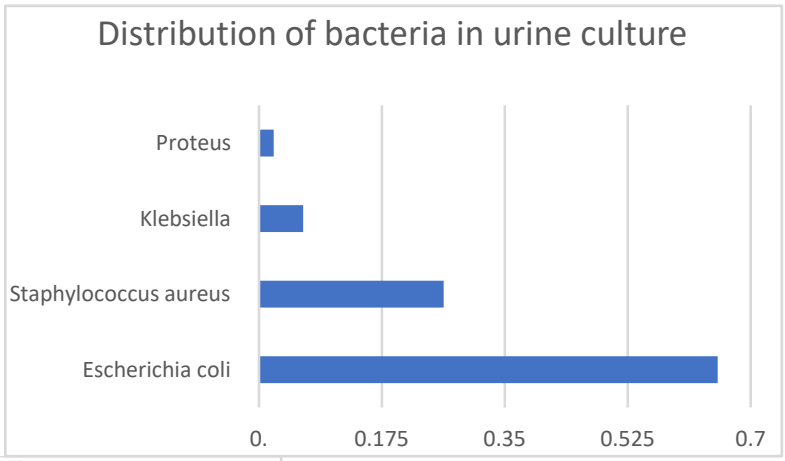
Asymptomatic bacteriuria is the presence of bacteria in the properly collected urine sample of a patient who has no signs and symptoms of urinary tract infection.The urine is cultured and significant growth of pathogens that is greater than 105 bacteria/ml is seen.Asymptomatic bacteriuria is common among pregnant women.Pregnant women who have previous history of urinary tract infection, overt diabetes mellitus, increased parity, and low socioeconomic status are more prone to asymptomatic bacteriuria[1,2].Commonest organisms responsible for asymptomatic bacteriuria in pregnancy are Escherichia coli , followed by coagulase negative Staphylococcus species,Klebsiella species ,Pseudomonas species, and Proteus species. These conditions begin in 6th week of gestation and peak during 22 to 24 weeks of gestation and this causes difficulty in passing urine.Conditions which occur as complications include transient renal failure, Acute respiratory distress syndrome,Sepsis,Shock and hematological abnormalities which occur in cases where asymptomatic bacteriuria is untreated or inadequately treated.Without treatment, as many as 20 to 35 percent of pregnant women with asymptomatic bacteriuria will develop a symptomatic urinary tract infection (UTI), including pyelonephritis, during pregnancy[3,4].The risk of pyelonephritis is reduced when asymptomatic bacteriuria is treated at an early stage. This condition can also cause several risks to the fetus as well as the mother so, it is necessary to screen every antenatal mother at an early stage to prevent structural and functional abnormalities in the foetus.Thus it is

mandatory to screen every mother who visits health centre for antenatal checkup at an early stage to provide appropriate treatment and to prevent further complications.

MATERIALS AND METHODOLOGY

Study design:
A Prospective Cross-sectional study was conducted.
A total of 250 pregnant women attending antenatal clinic at civil hospital, Saveetha medical college, Thandalam, Tamil Nadu.The study was conducted between January 2021-march 2021 for pregnant women of age groups between 18 and 30 years.Consent was obtained from pregnant women who agreed to enter the study and were clinically evaluated. All these women were asked to submit clean catch midstream urine samples collected in wide-mouthed sterile screw capped containers after proper cleansing of the external genitalia. Labelled urine samples were collected and was sent to laboratory for microbiological examination. Screening test was not performed for pregnant women who are symptomatic with significant bacteriuria and the samples obtained were directly processed for culture and sensitivity.Bacterial growth of 10^5 CFU/ml or more is regarded as significant for infection. The organisms isolated from culture plates were identified through standard laboratory techniques. Antimicrobial in-vitro susceptibility testing was performed using agar disc diffusion method[6].

RESULTS
A total of 250 pregnant women were included in our study, which include age groups between 18 and 30years.
From figure 2, the highest incidence of asymptomatic bacteriuria was seen between the age groups 26 to 30 years , and the lowest incidence was seen between 21 and 24 years age group. Escherichia coli is found to be the most dominant organism, followed by Staphylococcus aureus, Klebsiella, and Proteus species as depicted in figure 1. A total of 68 (27.2%) patients were identified with asymptomatic bacteriuria.The incidence of the organism Proteus was the least.The second highest organism found was staphylococcus aureus.



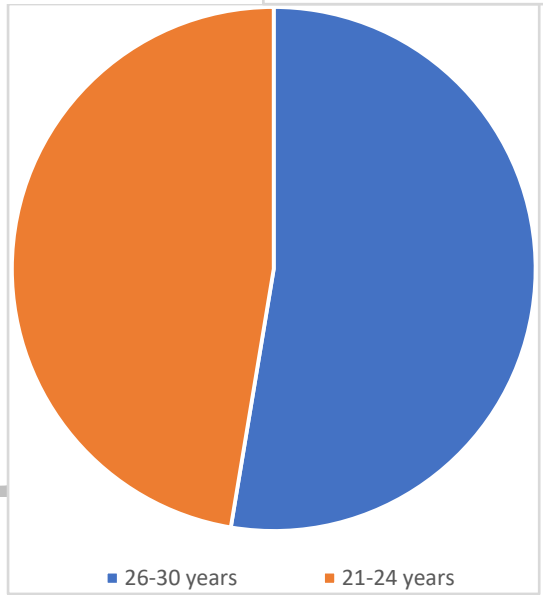


Figure 1.Distribution of bacteria in urine culture to load of bacteria present in various samples

Figure 2.Total number of patients distributed according to the age group

DISCUSSION

In the present study, the incidence of asymptomatic bacteriuria in pregnant women is found to be 27.2%. In a study conducted at Nigeria, the incidence of bacteriuria in pregnant women was found to be 23.9%[5].To support this inference ,a study conducted in Ghana[6], the incidence was found to be 7.3%, whereas in a study conducted in Ethiopia[7], the incidence was found to be 7%.In a study conducted by Imade, the incidence was 45.3%[8] and in the study conducted by Dange et al, the incidence was found to be 28%[9].In a research conducted by Mukherjee et al , the incidence was 8.4%[10]. It is found that incidence was lower in the studies conducted in Nigeria,Ghana and Ethiopia when compared to our results.

These studies infer that the incidence of asymptomatic bacteriuria is lower in developing countries.

The incidence of asymptomatic bacteriuria was distributed in various age groups and the highest incidence was seen in the age group between 26 to 30 years as supported by our data. Similarly the lowest incidence was seen between the age groups 21 to 24 years. In a research conducted by Turpin et al,the age group between 26 to 30 years poses as a huge risk for asymptomatic bacteriuria[6].In the study conducted by Imade et al,age group 26-30 years had a high incidence of asymptomatic bacteriuria which is also similar to the study conducted by Amadi et al[11].Increased maternal age is thought to increase the risk of asymptomatic bacteriuria and in addition Multiparty is also said to increase the risk of asymptomatic bacteriuria in pregnancy[12,13]

The study shows high prevalence of Escherichia coli in 65.30%,Staphylococcus aureus in 26.30%, Klebsiella in 6.30 %, and Proteus in 2.10% . Escherichia coli were found to be the highest in the study. This result was supported by a study conducted by Edae et al [14] where Escherichia coli were found to be the high in incidence.The study conducted by Imade et al,Escherichia coli (27.1%) was the most prevalent organism followed by staphylococcus aureus(24.4%), this was similar to the studies conducted by Delzell et al[16], cheesbrough et al[17]and blomberg et al[18].The incidence of Staphylococcus aureus is high in our study which is also similar to the study conducted by Akereleet al[15].Escherichia coli is most prevalent and this could be attributed to the fact that urinary stasis is very common among pregnant women, E.coli multiplies rapidly in such an environment thereby causing urinary tract infection[19]

CONCLUSION

The study observed 27.2% of pregnant women having asymptomatic bacteriuria. The culture showed high incidence of Escherichia coli (65.30%), Staphylococcus aureus (26.30%), Klebsiella (6.30 %), and Proteus (2.10%). This is a significant value and this must be reduced by screening the mothers during their first trimester and routine urine culture test must be carried out.

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