

PROBLEM OF ASYMPTOMATIC
BACTERIURIA IN WOMEN

THESIS

Submitted for the Partial Fulfillment

For Master Degree of

GYNAECOLOGY AND OBSTETRICS

BY

SAMIA EL SAEID ABDEL MAWLA

M.B., B.Ch

UNDER SUPERVISION OF

Prof. Dr. MOHAMED NAGY EL-MAKHAZANGY

Prof. of Obstetrics and Gynaecology

Dr. AHMED ISMAIL ABOU GABAL

Lecturer of Obstetrics and Gynaecology

Dr. SAMIR IBRAHEIM ABDEL HADI

Lecturer of Microbiology and Immunology

Gyn. & Obst. Dept.

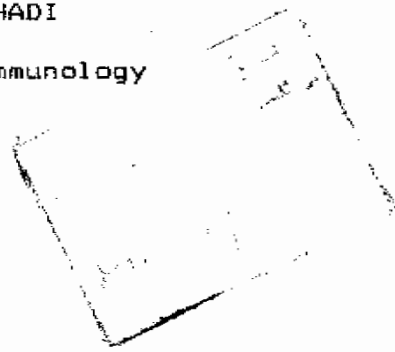
Faculty of Medicine

Ain Shams University

- 1988 -



47360



Handwritten notes in Arabic and numbers:
618.3
5.A
1989/12/10

Contents

	Page
- Introduction	1
- Review of Literature	
- Anatomical and physiological changes that occur in the urinary system during pregnancy.	5
- Methods of urine collection	15
- Methods for quantitative culture	24
- Presumptive tests for detection of bacteriuria	29
- Asymptomatic bacteriuria during pregnancy	35
- Prophylaxis and therapeutic treatment of asymptomatic bacteriuria	55
- Subjects and methods	80
- Results	90
- Discussion	101
- Summary	110
- References	115
- Arabic Summary	



ACKNOWLEDGEMENT

It is a pleasure to acknowledge my deepest gratitude to Professor Mohamed Nagy El-Makhazangy, Prof. of Gynaecology and Obstetrics for his kind supervision and constant guidance throughout the course of this work.

Many thanks and deep appreciation to Dr. Ahmed Ismail Abou Gabal, Lecturer of Gynaecology and Obstetrics for his kind assistance and cooperation.

I am also thankful to Dr. Samir Ibrahim Abdel Hadi, Lecturer of Microbiology and Immunology for his supervision and contribution towards the fulfillment of this study.

I would like also to thank every member who participated in this work.

Contents

	Page
- Introduction	1
- Review of Literature	
- Anatomical and physiological changes that occur in the urinary system during pregnancy	5
- Methods of urine collection	15
- Methods for quantitative culture	24
- Presumptive tests for detection of bacteriuria	29
- Asymptomatic bacteriuria during pregnancy	35
- Prophylaxis and therapeutic treatment of asymptomatic bacteriuria	55
- Subjects and methods	80
- Results	90
- Discussion	101
- Summary	110
- References	115
- Arabic Summary	

List of Tables and Figures

<u>Review :</u>	Page
- Table 1 : Antimicrobial regimen for treatment of bacteriuria in adults.	68
- Table 2 : Single-dose treatment of bacteriuria in pregnancy	74
 <u>Results :</u>	
- Table 1 : Prevalence of ASB among different groups	90
- Table 2 : Age distribution of women with ASB and +ve cultures.	91
- Table 3a: Sensitivity & specificity of Nitrite test compared with culture among multigravidae.	92
- Table 3b: Sensitivity & specificity of Nitrite test compared with culture among primigravidae.	93
- Table 3c: Sensitivity & specificity of Nitrite test compared with culture among multigravidae	94
- Table 4 : Accuracy of Nitrite test in screening for ASB.	95
- Table 5a: Sensitivity & specificity of significant pyuria compared with culture among multigravidae	96
- Table 5b: Sensitivity & specificity of significant pyuria compared with culture among primigravidae	97
- Table 5c: Sensitivity & specificity of significant pyuria compared with culture among multigravidae.	98

	Page
- Table 6 : Accuracy of significant pyuria in screening for ASB	99
- Table 7 : Frequency of different organisms in urine cultures.	100

Figures :

- Fig. 1 : Prevalence of ASB	90
- Fig. 2 : Age distribution of cases with ASB and + ve culture	91

Pictures :

1.	Petri dish cultured with calibrated Bacteriological loop showing mixed culture (on the right side) and single culture with number of C.F.U more than 10^5 (on the left side).	83
2.	Three "Bacturcult" tubes, the 1st is empty, 2nd shows very small No. of C.F.U i.e less than 25 in the circle, 3rd shows less than 25 C.F.U. with mixed culture.	83
3.	Another three "Bacturcult" tubes, 1st shows 25-50 C.F.U (insignificant), 2nd shows single species and more than 50 C.F.U. (Significant), the colour is changed to purplish-red (Magenta) indicating either proteus or pseudomonas, the 3rd shows single species and more than 50 C.F.U. (Significant), the colour is changed to yellow indicating E. Coli, citrobacter or Enterobacter.	86

List of Abbreviations

PSP	Phenolsulfon phthalein
C.F.U.	Colony forming unite
E.M.B	Eosin Methylen blue
H.P.F	High power field
T.T.C	Triphenyl-tetrazolium chloride
E.Coli	Escherichia Coli
I.U.D	Intrauterine device
I.V.P	Intravenous pyelogram
U.T.I	Urinary tract infection
ASB	Asymptomatic bacteriuria
pH	Reaction of the culture medium either acidic or alkaline
Æ	Ælharziasis
Nullig	Mulligravidae
Primig.	Primigravidae
Multig.	Multigravidae
Bact.	Bacterial
Signif.	Significant
Organ.	Organism.
Freq.	Frequency.

Introduction

INTRODUCTION

Urinary tract infection is the most common type of bacterial infection in females in developed countries. Acute pyelonephritis remains the most common medical complication of pregnancy, with an overall incidence of 1-2%. Morbidity from pyelonephritis affects both mother and foetus.

The mother is at risk of sepsis, recurrent pyelonephritis in the same pregnancy and subsequent development of chronic renal disease. The foetus is jeopardized by the potential ill effects of maternal fever, antibiotic administration and premature labour (Dorsten, 1983).

Gilbert (1984) reported that asymptomatic bacteriuria is defined as the presence of a single species of bacterium in a count of 10^5 organisms/ml or more in at least two consecutive clean voided specimens of urine collected at different times from a person without symptoms referable to the urinary tract.

Several studies have indicated that there is a significant incidence of asymptomatic bacteriuria during pregnancy and an association of bacteriuria with maternal and foetal morbidity, (Deshan *et al.*, 1966).

The incidence of asymptomatic bacteriuria is low 2% to 3% in private patients, while it may reach 6% to 10% in indigent patients (Turk et al., 1962).

Pritchard et al., (1985) found that the highest incidence of asymptomatic bacteriuria has been reported in black multiparas with sickle cell trait, and the lowest incidence has been found in white, socioeconomically more privileged women of low parity.

Turner (1961) and Sleigh et al., (1964) reported that almost 50% of pregnant women with asymptomatic bacteriuria developed clinical urinary tract infections before or shortly after delivery.

It is generally accepted that about 30% of the untreated patients with bacteriuria will subsequently develop acute pyelonephritis during the gestational period (Duff., 1984).

Henderson et al., (1962) found that the incidence of premature delivery to be over 20% in patients with bacteriuria, while Abramson et al., (1971) reported an association between bacteriuria of pregnancy and maternal anemia.

Some investigators as Stuart et al., (1965) demonstrated an association between bacteriuria and hypertension, while others object this relation (Monson et al., (1963).

An increased frequency of abortions and / or still births has been reported by several investigators as Layton (1964), therefore, screening of all pregnant women during their first antenatal visit by means of quantitative urine culture is strongly recommended, (Andriole, 1975).

AIM OF THE WORK

This study aims to estimate the prevalence of asymptomatic bacteriuria among Egyptian pregnant and nulliparous women attending the antenatal outpatient clinic of Maternity Hospital of Ain Shams University.

Also to compare the different screening methods used for diagnosis of asymptomatic bacteriuria to choose the most reliable, and practical method for screening among women attending the outpatient clinic.

Review of Literature

ANATOMICAL AND PHYSIOLOGICAL CHANGES OCCURING IN THE URINARY SYSTEM DURING PREGNANCY

Although the anatomical and physiological changes that occur during pregnancy chiefly involve the genital tract and the breasts, many other inter-related changes occur in other systems of the body. All these changes are initiated by Hormones produced by the faetal chorionic tissue (Clayton et al., 1975).

While Sims, (1968) postulated that an increase in cortisol during pregnancy may also enhance renal function. While Lockett., (1965) said that the secretion of prolactin produce large increase in renal blood flow and glomerular filtration rate.

Sala & Rubi, (1967) in their studies found that obstruction increases pressure in the ureter above the pelvic brim, which is relieved promptly by delivery. Dextrorotation of the uterus compresses the right ureter more than the left, so the hydronephrosis and hydroureter are more pronounced on the right side, and also pyelonephritis is more common in the right kidney during pregnancy.