EVALUATION OF CASES OF URINARY TRACT INFECTIONS DURING PREGNANCY, LABOUR AND PEURPERIUM .

A Thesis
Presented in Partial Fulfilment for
the Degree of M.S.

(Obstetrics and Gynaecology)

By

Taysir Ismail Khalil Hamzah
M.B.,B.Ch.

AIN SHAMS UNIVERSITY
FACULTY OF MEDICINE

Supervisors:

Prof. Dr. Khalil Ismail El Lamie.

Ass. Prof. Dr. Ibrahim El-Metwaly Samaha.

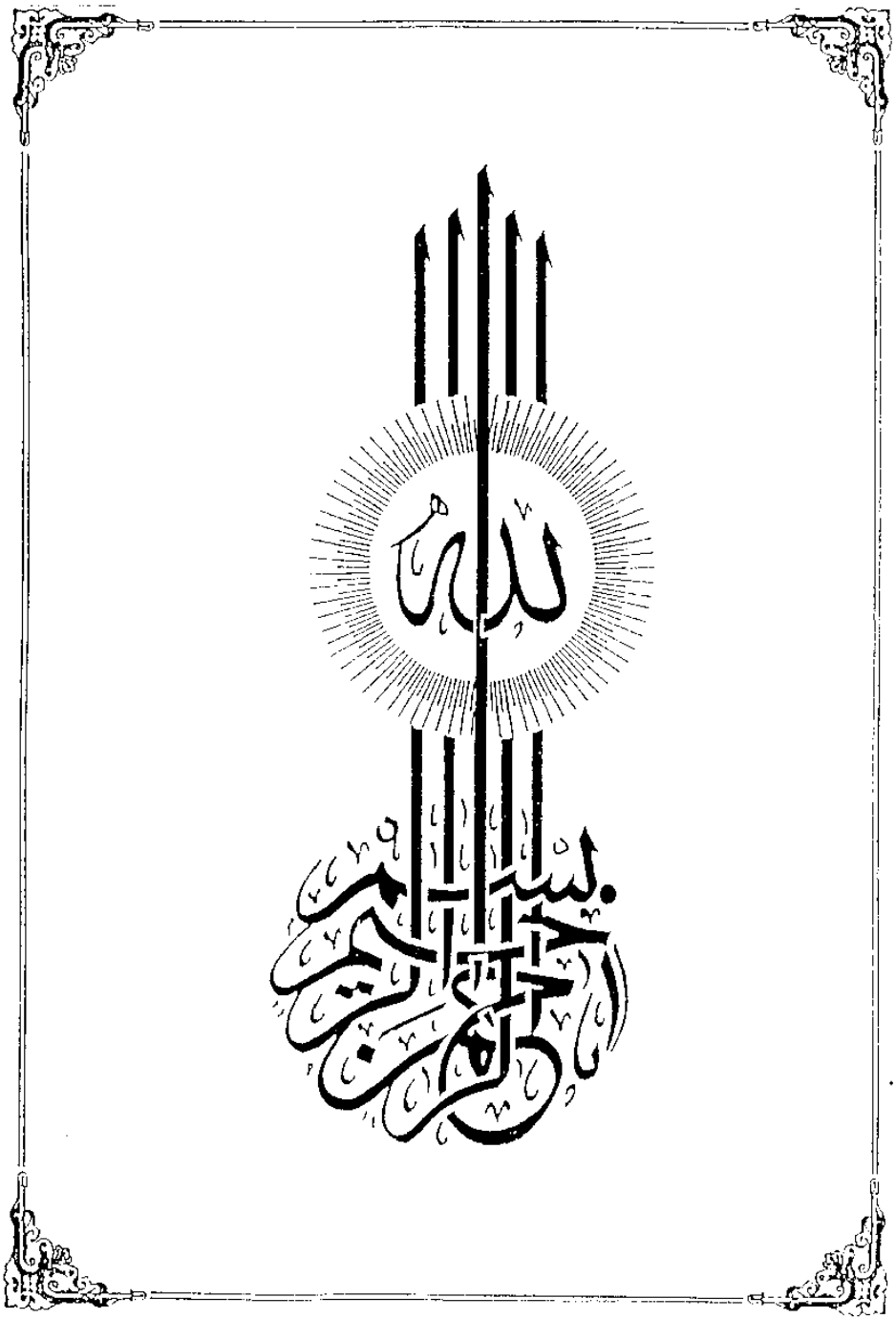
1977

ACKNOWLEDGEMENT

I would like to express my sincere gratitude, deep thanks and appreciation to my Prof. Dr. Khalil Ismail El-Lamie, Professor of Obstetrics and Gynaecology, Faculty of Medicine Ain Shams University, for his faithful supervision, Guidnace and encouragement . throughout the accomplishment of this study. Indeed without his help this work could not have been done.

I am extremely gratful to my Ass. Prof. Dr. Ibrahim El-Metwally Samaha for his continuous supervision and advice and for his sincere help all through my work.

Finally my sincere thanks are extended to the staff of the Obstetrics and Gynaecology Department, and all those who participated in one way or another in making this work possible.



INTRODUCTION

INTRODUCTION

Urinary tract infection is a problem in all countries of the world. (Pyelitis of pregnancy) was recognised before the bacteriological era (Rayer 1841) and in a review, Sims (1965) discribed pyelonephritis as the most frequent and important medical complication of pregnancy, also cystitis is a common disease of women of child bearing age.

In 1956 Kass Published, collected informations on the importance of asymptomatic infection and stressed the need to recognize this condition, as it was sometimes the Precursor of severe symptomatic infections which could be prevented by early detection and cure of the asymptomatic disease.

It has become apparent that chronic pyelonephritis is an important cause of renal failure, this also carries an importance to the study of the problem.

The early detection and treatment of urinary infection in obstetrics, provids an excellent opportunity for the practice of preventive medicine, whereas failure of recognition and treatment may lead to a chronic, irreversible disease.

Also the renal diseases increase the incidence of prematurity, foetal loss and Pre-eclamptic toxaemia (Low et al., 1964; Little 1966).

There is statistical relationship between bacteriuria and prematurity and hence to neo-natal deaths (Kass 1960 ; Savage et al. 1967).

Kass 1967 found a prematurity rate of 23 % in a group of untreated bacteriurics compared with 13.5 % in random sample of pregnant population.

Condie et al. 1968 showed a significant difference in prematurity rate between bacteriurics (23 Prematures out of 180 total births) and the control (9 Prematures out of 180 total births).

"Physiological Changes in the Urinary Tract During Pregnancy".

Atony and dilatation of the renal pelvis, calyces and ureters occur, and the later are not only displaced somewhat laterally in the abdominal Portion of their course but are liable to develop Kinks.

These changes have been observed to occur in varying degrees as early as the seventh week of gestation, becoming gradually progressive up to term, and rapidly returning to normal (in the abscence of infection), by the 7th, Post-partum day in one third of women, and by one month in two-thirds of women, and in almost all women by the second month after delivery.

Specific and characteristic dilatation occurs in the upper collecting system during pregnancy down to the level of pelvic brim. The ureters are markedly dilated, elongated and tortuous, more common on the right side than on the left side.

Although the intraureteric pressures are normal during the first two months, ureteral peristalsis is reduced thereafter, and in the 7th and 8th months of

pregnancy there are no contractions (Hadson 1968); However the intraureteric pressures begin to rise again in the last few weeks.

Below the pelvic brim, there is hypertrophy of the longitudinal musculature of the ureter (Waldeyer's sheeth) which can be demonstrated as early as the 7th, week of gestation, which may be an important factor in preventing dilatation of the lower third of the ureter.

The bladder undergoes progressive decrease in tone and increase in capacity, so that in the late pregnancy it contains double its normal volume (1000 ml.)

The precise factor or factors responsible for these physiologic changes have not been definitively determined. However (Fainstate 1963) suggested that progesterone, gonadotrophins and oestrogen whichare plentiful during pregnancy are the primary factors which cause hydroureter during pregnancy, and that the ureteral obstruction by dextrorotation of the pregnant uterus possibly plays an important but clearly secondary role.

In support of this, the effect of oestrogens in the production of hydroureter was studied in expiremental

animals in order to determine the relationship between the excess production of oestrogens during pregnancy and increased susceptibility to urinary tract infection.

Varying degrees of hydroureter as well as a marked increased susceptibility to E - coli pyelenephritis were observed in male and female rats treated with oestrogens.

These observations suggested that the physiological changes that occur during pregnancy will be attributed to (Hyperestrogenism), and provided partial explanation for the increased frequency of acute pyelonephritis in the last trimester of human pregnancy (Andriol and Cohn 1964). Similar observations have been found in women taking oral contraceptives (Marshal et al. 1966) and (Guyer and Delaney 1970). Who also have been found to have an increased prevalence of bacteriuria (Takahsshi and Loveland 1974).

Bacteriuria.

Definition:

Among other major contributions in this field kase provided us with an acceptable definition of bacteriuria.
Previously the term bacteriuria implied the presence of organisms in the urine without significant pyuria.

Significant Bacteriuria:

Definition and variability:- It is the abnormal presence of a significant number of bacteria in a clean-voided, first, mid-stream urine specimen, counted by a quantitative bacteriologic culture,

If more than 100,000 bacteria / ml urine, this is considered significant, and provide us with 80% probabilty that this patient has true bacteriuria. If less than 10,000 bacteria/ml urine, it provide us with probability that this patient has a sterile urine.

The concept of significant bacteriuria is basic to the accurate interpretation of urine cultures. Urine

secreted by the normal kidney is sterile and remains so while it travels to the bladder. However, the normal urethra has a microbial flora, and any voided urine in normal person may therfore contain thousands of bacteria per milliliter derived from this normal flora. To differentiate this smaller number of microorganisms from the larger number commonly found in urinary tract infection, it is essential to count the number of bacteria in fresh, properly collected urine specimens by appropriate methods (quantitative culture). Kass proved that, if two consecutive midstream urine spicimens showed over 100,000 organisms/ ml, there was a 90 - 95% chance that the third specimen whould also contain over 100,000 organism/ ml.

The frequency of urinay tract infection during pregnancy has been apparent for many years.

Asymptomatic bacteriuria, however recieved little attention, although it was recognised as common accompaniment of pregnancy, several significant studies were done over 20 years ago wich among other things indicated an increased incidence of preeclamsia and premature deliveries associated with urinary tract infection ir pregnancy.

Few could now dispute the relationship of asymptomatic bacteriuria during early pregnancy and the subsequent development of acute symptomatic urinary tract infection.

Kass (1956, 1957, 1960) reported that 40% of patients found to have bacteriuria in early pregnancy, develop, acute pyelonephritis later in pregnancy, but that acute complication did not occur in women whose urine was sterile early in pregnancy .

So Kass again stimulated interest in bacteriuria when he pointed out that many bacteriuric women develop pyelonephritis in pregnancy and that this can be prevented by treatment.

Relation between asymptomatic bacteriuria in pregancy and chronic progressive pyelonephritis.

It is less clear since few prospective long term studies on patient with urinary infections are available.

In some pregnant women bacteriuria is almost a benign condition causing no marked complications during pregnancy and being early eradicated by chemotheropy. In others the urine can not be kept clear of bacteria even after several courses of different chemotheraputics, some of this group progress to renal damage and proceed to chronic renal failure.

Prevalence and Significance of Bacteriuria:

Screening population for asymptomatic bacteriuria has demonstrated that the prevalence of bacteriuria in females rises with age, at a rate of 1% for each decade of life from the aged of 5 years on words. Not only with age but also with sexual activity and parity(Kunin 1972).

Additional studies have also shown that the overall prevalence of asymptomatic bacteriuria in pregnancy ranges between 4-6.9% (L. Norden an Kass 1968).

Also pregnant patients of higher socioeconomic level may be less frequently bacteriuric than those from lower socio-economic levels. (Henderson et al 1962; Turck et al 1962).

Acquisition of Bacteriuria:

Bacteriuria has been studied in so much detail during pregnancy, and in fact there is evidence to suggest that pregnancy with modern antenatal care, may be an incidental reason for detecting a chronic condition which was often present long before pregnancy.

Sleigh et al (1964) found that 8% of group of 397 nulliparous married women had bacteriuria, if compared with 6.6% of 1,684 pergnant women from the same area.

Table (1)

	Total	% Of Bacteriuria
Nulliparous	397	8%
Pregnant	1684	6.6%

- Kass 1965 found that 4% of adult women had bacteriuria
- Stuart et al 1965 found the prevalence among pregnant women to be 3.5%.

. Sussman et al 1969 found the prevalence among non pregnant women 3.5%.

This evidence suggests that a small but definit proportion of adult women have significant bactiuria (Possibly related to marriage and intercourse).

Therfore on the basis of the present data, it would be incorrect to consider that pregnancy it self is responsible for the major increase in the aquisition of significant bacteriuria except in those patients who might undergo cathetirization of the bladder.

In fact the initial studies of Kass 1959, and later of others (Kunin 1972) clearly demonstrated that 20%-40% of patients with bacteriuria detected in early pregnancy developed acute pyelonephritis later in pregnancy.