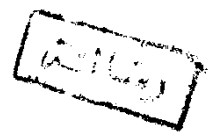
CAESAREAN SECTION
MICROBIOLOGY AND PROPHYLACTIC ANTIBIOTICS

THESIS

Presented For Partral Fulfilment

Of M.D.Degree In Obstetrics and Gynaecology



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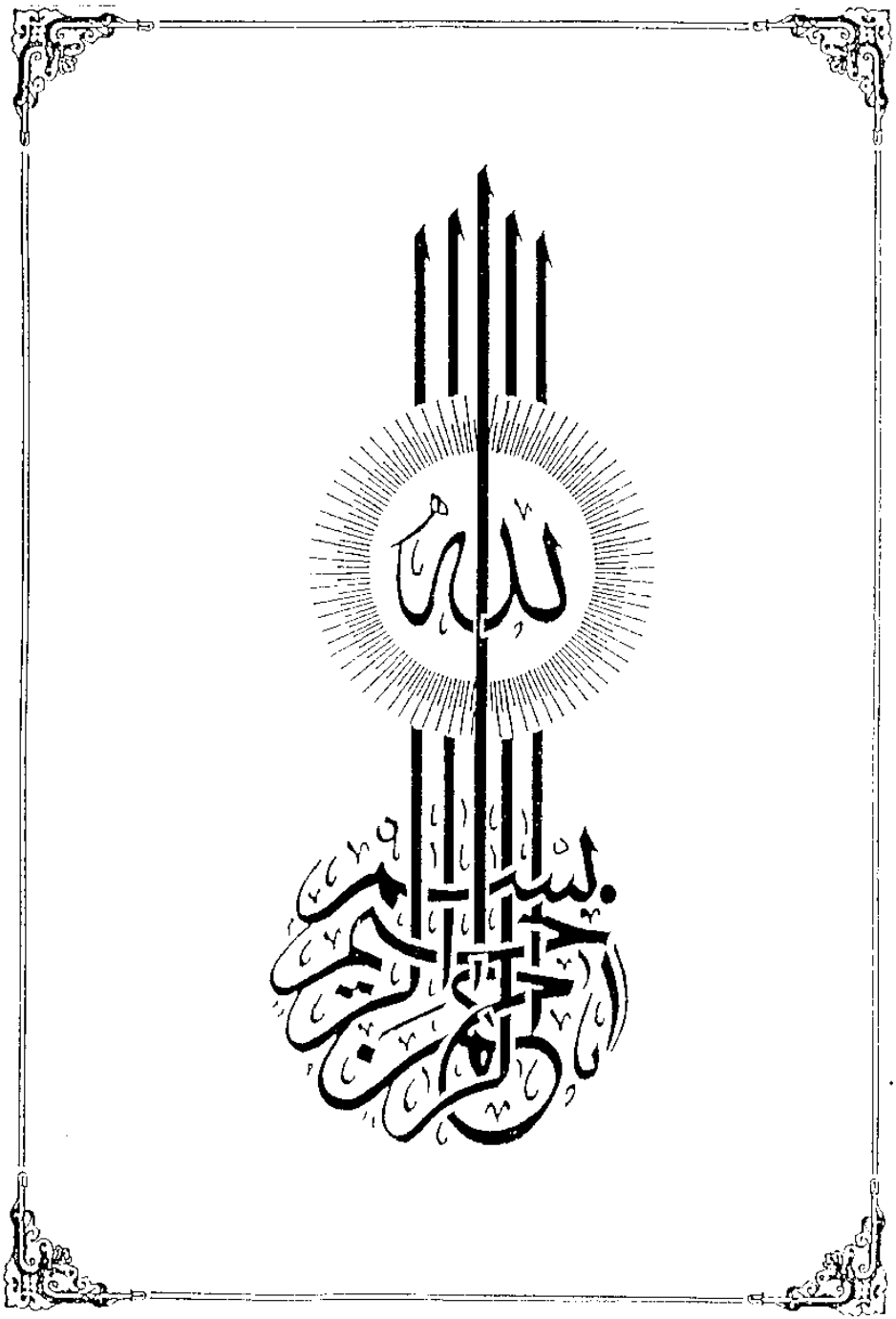

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Section One

INTRODUCTION AND AIM OF WORK

Introduction and Aim of work

Introduction :

Caesarean section is one of the major abdominal operations. Nowadays, the number of deliveries which are terminated by Caesarean section is increasing and new indications are emerging from experience aiming at the achievement of better outcome both for the mother and the baby.

Caesarean section has become a relatively safer procedure and the previous major complications encountered as haemorrhage and infection have now decreased owing to the application of more skillful technique under strict aseptic precautions together with the use of antimicrobials widely either prophylactically before the operation or when infectious morbidity ensues postoperatively

The use of antibiotics with Caesarean section has been a matter of contraversy. Many studies have dealt with subject from many points of view including identification of risk factors, the type of patient needed to be given an antibiotic, the type of antibiotic that can yield effective results with minimum toxicity and the timing of administration of antibiotic so as to decrease the untoward effects and hazards on the foetus or newborn. Other

studies stressed on the evaluation of the benefit / risk of giving antibiotic to patients undergoing Caesarean section.

While most studies agreed that giving antibiotics prophylactically succeeded in decreasing the overall rate of postoperative infectious morbidity (Burk,1961; Miller and Crichton, 1968; Weissberg et al,1971;Gibbs et al,1972; Morrison et al,1973; Ledger 1977 and Charles,1980), yet, Cartwright et al (1984) in their obstetric and Gynecological survey reported that other investigators failed to find antibiotics helpful and they demonstrated that identifying the patient at increased risk for postoperative infectious morbidity would allow prophylaxis to be given only to those who would most benefit; and here emerged many studies to evaluate the risk factors related to the development of postoperative infectious morbidity for example, Hawrylyshyn et al (1981), Ott (1981), Rehu et al (1980), Harger et al (1981) and Stiver et al (1983).

However, others as Lyon et al (1987) reported that it is the careful surgical technique that can reduce the infectious morbidity after Caesarean section more than the use of antibiotics as they encountered minimum rates of postoperative infection (0.7%) despite the fact that antibiotics were used with decreasing frequency.

Arguments were raised on the seriousness of using antibiotics unnecessarily or routinely as regards adverse effects that might occur (Kreutner et al, 1978). Cartwright et al (1984) reported that these adverse effects included the emergence of resistant pathogens, and suffering caused by any allergic / toxic reactions and superinfections. Adverse foetal effects may result if the obstetrician administers prophylaxis before delivery.

The decision to use prophylactic antibiotics is complex and based on many factors, these include the prevalence of the infection(s) to be prevented with versus without the prophylaxis, the seriousness of the infection(s), the cost of prophylaxis for all patients versus the cost of treating only those who do become infected, and the prevalence of adverse effects secondary to prophylaxis. Most investigators never address the issue of cost-effectiveness in their reports. Instead, they have concentrated on trying to establish whether the use of prophylaxis makes a significant difference in infectious morbidity.

Aim of the work :

This study aims at the following :

1- Clarifying whether or not antibiotics need to be given after Caesarean section regardless the presence of any morbidity aiming

at decreasing the hazards of abuse of antibiotics on the foetus or neonate, the emergence of resistant strains together with decreasing hospital costs without exposing the mother to risk of infection.

2- Assessment of the efficacy of the currently used antibiotic in our hospital (Cephradine of Squibb (Velosef)) in decreasing infectious morbidity if any.

3- Declaring which type of patients need to be given antibiotics in view of dividing the patients into subgroups according to one of the most important risk factors responsible for increasing infectious morbidity that is whether there is rupture of membranes or not.

4- Assessment of the effect of certain other factors in view of their risk in increasing maternal infectious morbidity for example, labour and whether the Caesarean Section is primary or repeat.

5- A complete microbiological study of the pathogenic organism which the patients may harbour on admission to hospital both in areas related to the site of the operation and in other sites of the body (for any dormant infection) and comparing the findings

with those acquired three days after the operation during the hospital stay and correlating this to the development of any infectious morbidity to assess whether these pathogenic organisms necessitate treatment with antibiotics or not.

6- An initial study of any affection of the newborn and the organisms that he may harbour as soon as he is delivered together with after 3 days postoperatively.

Section Two

REVIEW OF LITERATURE

Chapter (I)

Microflora of female genital tract.

Until recent years the microbial flora in the healthy female genital tract was believed to be relatively homogenous.However, improved culture techniques have revealed that the normal flora comprises a widely diverse group of organisms.(Galask,1981).

Because these bacteria are often involved in infections of the genital tract,it is important for the clinician to be aware of their prevalence and pathogenic potential.Knowledge of the factors that alter the normal microbial balance is also essential. Pending culture results, postsurgical gynaecologic infections are usually treated emperically on the basis of the most commom causative organisms.(Haroldetal,1981)

-Normal cervical-Vaginal Microflora:

Aerobic organisms:

As in the past,lactobacilli are currently the dominant aerobic bacteria.Various species of this organism are present in most women.(Weinstein,1938)and(Grossman et al.,1979).Diphtheroid

bacilli constitute most of the remaining aerobic Gram positive rods.Both lactobacilli and diphtheroids are of low virulence, although they are occasionally isolated in mixed pelvic infections.

Doderlein's bacillus has often been cited as a reference organism in the clinical grading or assessment of the normal and/ or abnormal status of the vaginal flora.

Athough staphylococcus epidermidis (Coagulase {-}ve) is found in more than 40 percent of women, the more virulent staphylococcus aureus (coagulase {+}ve) is uncommonly found in healthy women(Galask,1981).

Streptococci are commonly isolated. Lancefield's group A, beta hemolytic streptococci are found occasionally. However most beta-hemolytic organisms isolated are in the group B category, a group currently recognized as an important cause of perinatal infection.(Ohm et al,1975)

Other commonly isolated Gram positive cocci include alpha-hemolytic and non-hemolytic streptococci and group D streptococci Although group D streptococci,which include enterococci are isolated in mixed pelvic infections,their pathogenic role remains uncertain.Escherichia coli is the most frequently isolated

aerobic Gram negative rod in the female genital tract.It is frequently encountered in pelvic infections, but recent quantitative studies (Bartlett et al.,1977 and Lindner et al .,1978) have indicated that E. coli is present in low numbers in healthy asymptomatic patients. Other Gram negative rods, such as Proteus species, Enterobacter and Klebsiella ,are found in only a small percentage of the population.

The normal vaginal flora also often includes clostridia, Gardnerella vaginalis, Ureaplasma urealyticum and sometimes listeria or Mobiluncus species.

Anaerobic Organisms:

Large numbers of anaerobic species have been isolated in cervical cultures.Table (1)shows those organisms most commonly isolated.