THE VALUE OF BIOPHYSICAL PROFILE SCORING IN THE PREDICTION OF FETAL INFECTION IN PATIENTS WITH PRETERM PRELABOR RUPTURE OF MEMBRANES

Thesis

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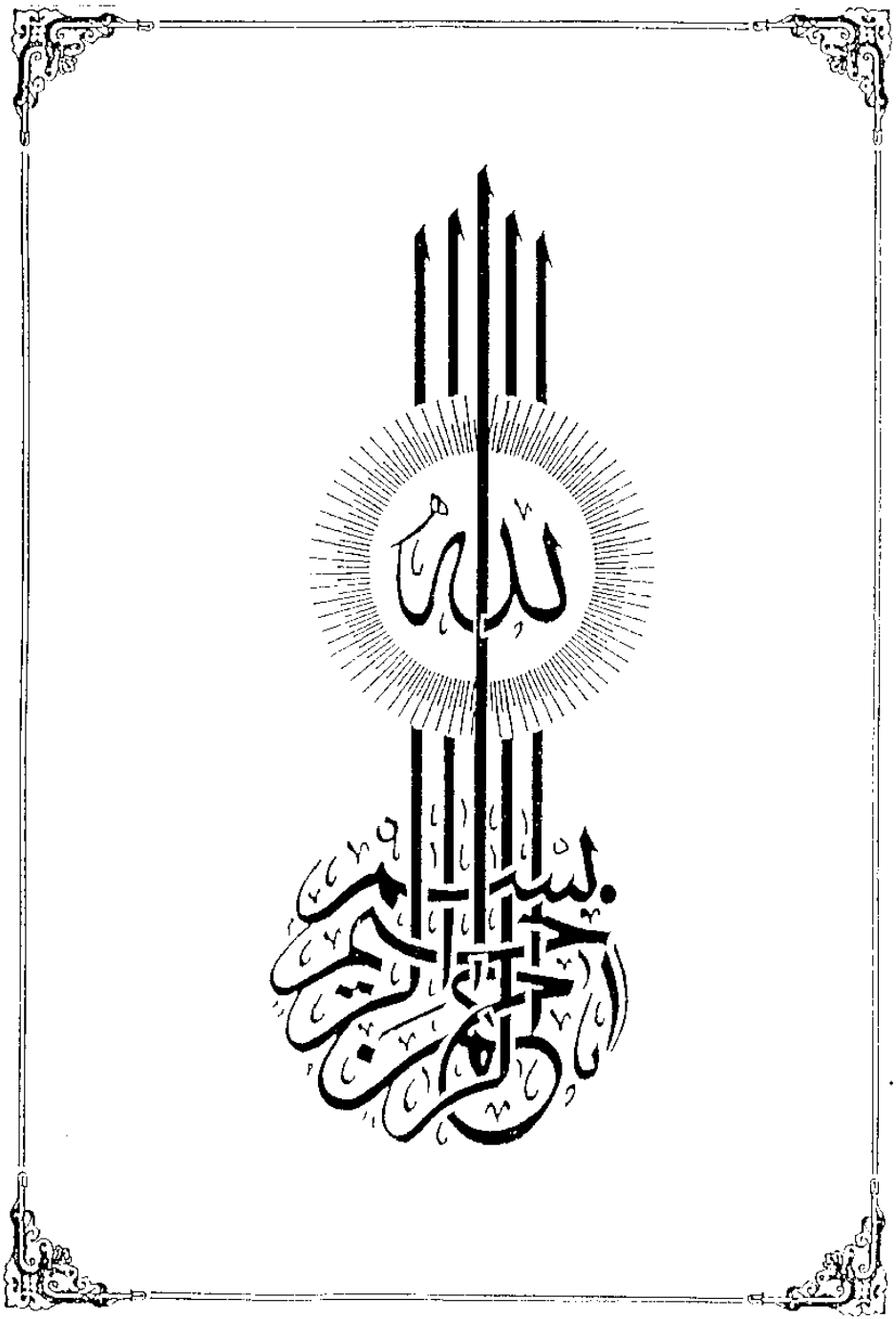
1996

بسم الله الرحمن الرحيم

وقل رب زدنى علما

صدق الله العظيم



TO EGYPT, MY HOME

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Introduction and Aim of the Work

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As maternal risk in pregnancy has diminished, Obstetric care has focused more on the fetus and neonate . Indeed, the fetus is no longer regarded as a maternal appendage . Instead, the fetus has achieved the status of the second patient, a patient who may face much greater risks of serious marbidity and mortality than does the mother .

In the 1960s and 1970s, biochemical assays - most commonly estriol and human placental lactogen - were widely used to assess placental function and predict fetal asphyxia. While these assays have a general association with fetal well - being, they have been of limited clinical importance due to the wide range of their normal values and the poor sensitivity and specificity . Other than maternal perception of fetal movement and auscultation of the fetal heart, it was the advent of fetal heart rate monitors that first allowed fetal biophysical assessment . This developed into the now widely - used Non - stress test and the contraction - stress test which is now less commonly used . The development of real - time ultrasound stimulated a more comprehensive study of fetal behaviour, allowing the observation of several biophysical events . Fetal biophysical variables detected by real - time ultrasonography along with non - stress testing were first reported for fetal assessment in the form of biophysical profile by Manning et al (1980) .

Cox and associates (1988) described the pregnancy outcomes of 298 consecutive women delivered following spontaneously ruptured membranes between 24 and 34 week . Although this complication was identified in only 1.7 percent of pregnancies, it contributed to 20 percent of all pernatal deaths during that time period. Prematurity and Intra - uterine infection are the two most important reasons for such poor outcome .

Morales (1987) repoted that infants born to women with intra - uterine infection had a fourfold increased neonatal mortality and a threefold increase in the incidence of respiratory distress, neonatal sepsis and intraverticular hemorhage .

If accurate methods were available for early detection of intrauterine infection, outcome in pregnancy complicated by PPROM could be improved . These methods included observation of maternal vital signs, hematologic studies and amniotic fluid analysis . Vintzileos and associates (1985) were the first to use the fetal biophysical profile using real - time ultrasound scanning in evaluating patients with PPROM as regards prediction of intrauterine infection and neonatal sepsis

Aim of the Work

The purpose of this study is to determine the value of the fetal biophysical profile in evaluating patints with preterm prelabor rupture of membranes . In this study, the fetal biophysical variables, fetal breathing movements, fetal movements, fetal tone, amniotic fluid volume and the non - stress test were measured to determine the relationship between single variables as well as the total score and intra - uterine infection and also the outcome of pregnancy (perinatal marbidity and mortality) . This may help us identifying fetuses at risk to help decision making wether to continue conservation to avoid the risks of prematurity or terminate pregnancy to avoid the risks of infection .

REVIEW OF LITERATURE

Chapter 1

Preterm Prelabor Rupture of Membranes

(PPROM)

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Definition and Nomenclature :

As the word " Premature " carries the connotation of preterm pregnancy, it was abandoned from being used to mean rupture of membranes prior to onset of labor and the word "Prelabor" was used instead . The word " Preterm " specifies rupture of membranes prior to 37 completed weeks of gestation (O'Herlihy and Turner 1991) .

The time interval between rupture of membranes and the onset of labor is termed the latency period and the time interval between rupture of membrane and delivery is termed the interval period (Williams, 1991) .

The incidence of prelabor rupture of membranes ranges from 4.5 to 7.6 percent of total deliveries and approximately 70 percent of cases occur at term (Daikoku et al., 1981) . Mead (1980) stated that prelabor rupture of membranes is a common event occuring in approximately 10 percent of all pregnancies .

Preterm Prelabor rupture of membranes occurs between 1 to 2 percent (around 1.7 percent) of all pregnancies (Christensen et al., 1976, Graham et al., 1982) Crenshaw (1986) stated that the incidence of PPROM varies greatly, institution-to-institution, from 15 to 45 percent of patients who develop preterm labor .

Rate of recurrence of PPROM in consecutive pregnancies

Naeye (1982) found that PPROM has a recurrence rate of 21 percent in the next pregnancy while a history of preterm delivery without PPROM in the initial pregnancy was associated with a 10 percent risk of PPROM in the next pregnancy . Asrat el al., (1991) found that PPROM has a recurrence rate of 32.2 percent with membranes rupturing at a later gestational age in the next pregnancy .

Etiology of PPROM :

I - Infection

PPROM is thought to be related to such infectious entities as cervicitis, vaginitis and colonization by certain microorganisms (Miller & Pastorek , 1986) .

Alger and Pupkin (1986) stated that several observations support the hypothesis that maternal genital tract infection may frequently play on etiologic role in PPROM .

* Similar demographic risk factors (Such as low socioeconomic status) are associated with PPROM and an increased incidence of sexually transmitted diseases .

* Seasonal variations in coital frequency parallel the variations in amniotic fluid infection and perinatal mortality

* Clinically and histologically - documented chorio-amnionitis occurs more frequently in association with preterm deliveries .

* Both mothers and infants are more likely to develop early onset infectious sequalae following a preterm delivery . Cederquist el al., (1979) noted many cases with clinical and immunologic evidence of infection within only 12 hours of PPROM by investigating card blood immunoglobulins . This suggested that infection was the cause of rupture . Amniotic fluid obtained by transabdominal amniocentesis from patients with PPROM showed clinically inapparant infection in approximately 30 percent of samples (Garite et al., 1979 ; Cotton et al., 1984) .

Mechanisms of membrane rupture :

Bejor et al., (1981) thought that mild or moderate uterine activity may be brought about by subclinical infection and this was supported by findings of phospholipase A2 activity in vaginal flora bacteria e.g. B. fragilis, peptostreptococcus species and Gardnerella vaginalis . Phospholipase A2 hydrolyzes the phospholipids in the membranes, producing an increase in the free arachidonic acid and the synthesis of prostglandins . Bacteria may thus trigger uterine activity and the contractions thus produced could cause early membrane rupture . The sequence of events is therefore thougt to be infection, occult uterine activity, membrane weakening and then rupture .