A STUDY OF THE CORRELATION BETWEEN ASYMPTOMATIC BACTERIURIA AND PRETERM LABOR

Thesis

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List of Abbreviations

Abb.	Mean
ACOG	American College of Obstetricians and Gynecologists
ANC	Antenatal care
ASB	Asymptomatic bacteriuria
BMI	Body mass index
C.Amp	Cyclic adenosine monophosphate
CAPs	Contraction associated protein
CFU/mL	Colony forming unite per milliliter
E.coli	Esherichia coli
G6PD	Glucose 6 phosphate dehydrogenase enzyme
GA	Gestational age
GBS	Group B streptococci
GFR	Glomerular filtration rate
GIT	Gastro intestinal tract
IL1-6	Interleukin-1,6
LBW	Low birth weight
PPROM	Preterm premature rupture of membrane
PROM	Premature rupture of membrane
PTB	Preterm birth
PTL	Preterm labor
UTI	Urinary tract infection
RDS	Respiratory distress syndrome
T.vaginalis	Trichomonas vaginalis
TNF	Tumor necrosis factor

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Introduction

Preterm birth is one of the major health hazards of humans, being the greatest cause after congenital anomalies of neonatal morbidity and mortality. Although there are many conditions that lead to preterm delivery. Spontaneous preterm labor in pregnancies with intact fetal membranes represents the largest cause of preterm delivery accounting for about half of preterm births ***(Cunningham et al., 2005).***

Preterm labor was defined as regular uterine contractions in patient before 37 completed weeks of gestation with intact membranes with 4cm or more of cervical dilatation observable during a 2 hours period ***(Saha et al., 2000)*.**

In about half the cases, the cause of preterm delivery is not known. However, accumulating evidence suggests that subclinical intrauterine infection with unknown etiology may be responsible for the majority of cases ***(Romero et al., 2002)***.

The risk factors of preterm labor include major and minor risk factors. The major risk factors include infection of choriodecidual space and amniotic fluid as in bacterial vaginosis, Group B streptococci, pyelonephritis, appendicitis, pneumonia, previous preterm labor, uterine

over-distention as in polyhydramnios, multiple pregnancy, cervical incompetence, uterine abnormalities. The minor risk factors include smoking, low body mass index, maternal age, multipara, low socioeconomic status, low levels of education ***(Mercer et al., 1999).***

Preterm infants are at risk for specific diseases such as respiratory distress syndrome, intraventricular hemorrhage, bronchopulmonary dysplasia, patent ductus arteriosus, necrotising enterocolitis, sepsis, apnea and retinopathy ***(Mercer, 2003).***

Controversy exists regarding the association between asymptomatic bacteriuria (ASB) during pregnancy and adverse perinatal outcome, including preterm deliveries and low-birth weight ***(Smaill, 2007)*.**

Urinary tract infections are the most common medical complication of pregnancy. Asymptomatic bacteriuria is the most prevalent of these infections and it is defined as, the finding of greater than (100,000) colony forming units per.mL of clean catch urine specimens or one catheterization specimen. Lower colony counts in asymptomatic women usually represent contamination ***(Hooton, 2002).***

The physiologic changes of pregnancy predispose women to bacteriuria. These physiological changes include urinary retention from the weight of the enlarging uterus and urinary stasis due to ureteral smooth muscle relaxation

(caused by increases in progesterone). In addition, glycosuria and aminoaciduria during pregnancy provide an excellent culture medium for bacteria in areas of urine stasis, short female urethra, cause urinary tract infections(UTIs) to become a common occurrence for pregnant women ***(Harris et al., 1981).***

Thirty percent of patients with untreated asymptomatic bacteriuria develop symptomatic cystitis and up to 50 percent develop pyelonephritis. Schieve and associates conducted a study involving 25,746 pregnant women with intrauterine growth retardation and low-birth weight and found that the presence of UTI was associated with preterm labor, hypertensive disorders of pregnancy, anemia and amnionitis ***(Delzell and Lefevre, 2000).***

The organisms that cause UTIs during pregnancy are the same as those found in nonpregnant patients. Escherichia coli accounts for 80 to 90 percent of infections. Other gram-negative rods such as Proteus mirabilis and Klebsiella pneumoniae are also common. Gram-positive organisms such as group B streptococcus and Staphylococcus saprophyticus are less common causes of UTI ***(Delzell and Lefevre, 2000).***

Aim of the Work

The aim of this work is to investigate the association between asymptomatic bacteriuria and spontaneous preterm labor.

Preterm Labor

Preterm delivery refers to birth between the onset of viability and 37 completed week's gestation. Preterm labor is usually defined as regular contractions accompanied by cervical changes occurring at less than 37 weeks' gestation (**Steers, 2005).**

Regular uterine contractions should be at least two every 10 minutes, while cervical changes refers to either dilatation or effacement. Dilatation of 2 cm or more and cervical length of 1 cm or less **(Arias 1993).**

In developed countries 12.7 percent of births in 2005 occurred preterm; 2.03 percent of all births were less than 32 weeks of gestation and 9.1 percent of all births were from 34 to 36 weeks of gestation **(Goldenberg et al., 2008).**

The major reason for the increase in preterm birth (PTB) is a higher rate of multiple gestation: between 1996 and 2002 the multiple birth ratio increased over 20 percent to 33 per 1000 live births (twin birth rate: 31/1000).

Pregnancies complicated by multiple gestations are prone to PTB; approximately 50 percent of twins and 90 percent of triplets are born preterm compare to less than 10 percent of singletons **(Martin et al., 2002).**

Spontaneous preterm labor accounts for 40 – 50% of all preterm deliveries, with the remainder resulting from preterm premature rupture of membranes (PPROM) (25-40%) and obstetrically indicated preterm delivery (20 -25%) mainly due to medical or obstetric conditions such as hypertension, antenatal hemorrhage, or intrauterine growth restriction **(Tucker et al., 1991).**

Types:

1) Elective preterm delivery as in case of alloimmunization and intrauterine growth restriction.
2) Emergency complicated preterm labor as in case of abruption of placenta and preterm premature rupture of membranes.
3) Uncomplicated spontaneous preterm labor. The latter account for around half of all preterm births, while elective delivery occurring in 16-18% and complicated emergency delivery in one quarter **(Halliday et al., 1988).**

Pathophysiology of preterm labor:

Preterm birth is the ultimate result of several different pathways that culminate in the initiation of labor before 37 weeks' gestation. It is useful to place preterm births in two broad categories- those that are obstetrically indicated and those that are spontaneous **(Meis et al., 1987).**