Aspartate Aminotransferase Versus Thyroid Hormones in Vaginal Washing Fluid as Markers for Preterm Premature Rupture of Membranes

Thesis

Submitted for Partial Fulfillment of the Master Degree in Obstetrics and Gynecology

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2010

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LIST OF ABBREVIATIONS

Abbrev.	
ABS	Amniotic band syndrome
AF	Amniotic fluid
AF cells	Amniotic fluid cells
AFI	Amniotic fluid index
AFP	Alpha-fetoprotein
AFS	Antenatal fetal surveillance
AFV	Amniotic fluid volume
AROM	Artificial rupture of the membranes
AST	Aspartate amnio transferase enzyme
BMI	Body mass index
BPP	Biophysical profile
BV	Bacterial vaginosis
CA	Chorioamnion
cAMP	Cyclic Adenosine Monophosphate
CBC	Complete blood count
cDNA	Complementary deoxyribonucleic acid
CIN	Cervical intraepithelial neoplasia
CRP	C reactive protein
CS	Cesarean section
DAO	Diamino-oxidase
E cells	Epithelial like cells
ECM	Extracellular matrix
EDS	Ehler Danlos Syndrome
EEC	Extra embryonic coelom
EM-O	Expectant management and induction
EM-P	with oxytocin
ESR	Expectant management and induction
fFN	with prostaglandin
FM	Erythrocyte sedimentation rate
FSH	Fetal fibronectin
FS	Fetal membrane
GBS	Follicular stimulating hormone
GOT	Fetal serum
hCG	Group-B streptococcus
HIV-1	Glutamate oxaloacetate transaminase
HMD	Human chorionic gonadotropin

HOX A	Human immunodeficiency virus type 1
IAI	Hyaline membrane disease
IDDM	Homeobox A
IGF	Intra-amniotic infection
IGFBP-rPs	Insulin-dependent diabetes mellitus
IGFBPs	Insulin-like growth factor
IGFBP-1	Insulin-like growth factor binding
ILs	protein-related proteins
IUGR	Insulin-like growth factor binding
IVH	proteins
IwO	Insulin-like growth factor binding
IwP	protein-1
kDa	Interleukins
LEEP	Intra-uterine growth restriction
LDH	Intraventricular hemorrhage
LH	Induction with oxytocin
LLETZ	Induction with prostaglandin
LPS	Killo Dalton
MIAC	Loop electrosurgical excision procedure
MMPs	Lactate dehydrogenase
MMP-1	Luteinizing hormone
MMP-2	Large-loop excision of the transformation
MMP-8	zone
MMP-9	Lipopolysaccharide
MVP	Microbial invasion of the amniotic cavity
mRNA	Matrix metalloproteinases
NEC	Collagenase-1 enzyme
NICHHD	Gelatinase A
NICU	Collagenase-2
NIDDM	Gelatinase B
NPV	Maximum vertical pocket
NST	Messenger ribonucleic acid
onfFN	Necrotizing enterocolitis
P	National Institute of Child Health and
PBEF	Human Development
PCOS	Neonatal intensive care unit
PDA	Non-insulin-dependent diabetes mellitus
PGE1	Negative predictive value
pIGFBP-1	Non-stress test
PPROM	Oncofetal fibronectin

PPV	Probability
PROM	Pre-B cell colony enhancing factor
PRRs	Polycystic ovary syndrome
RDS	Patent ductus arteriosus
ROC curve	Prostaglandins E1
ROM	Phosphorylated IGFBP-1
ROP	Preterm premature rupture of membranes
ROS	Positive predictive value
r-test	Premature rupture of membranes
SD	Pattern recognition receptors
(S/D)	Respiratory distress syndrome
SGA	Receiver operating characteristic curve
SHBG	Rupture of membranes
SLPI	Retinopathy of prematurity
SROM	Reactive oxygen species
STD	Correlation co-efficient test
T_3	Standard deviation
T_4	Systolic- diastolic ratio
TSH	Small for gestational age
t-test	Sex hormone-binding globulin
Term PROM	Secretory leucocyte protease inhibitor
TIMPs	Spontaneous rupture of membranes
TLC	Sexually transmitted disease
TNF	Triiodothyronine
vAF	Thyroxine
WBC	Thyroid stimulating hormone
X^2	Unpaired t-test
Z	Term Prelabor Rupture of the Membranes
2-DP	Tissue inhibitors of metalloproteinases
	Total leucocytic count
	Tumor necrosis factor
	Vaginal amniotic fluid
	White blood cell
	Chi-square test
	Mann Whitney Willcoxon test
	Two-diameter Pocket

Acknowledgment

First of all, thanks to ***Allah*** *the most merciful for giving me the strength to complete work.*

I wish to express my deepest gratitude to ***Prof. Dr. Sherif Mohamed Saleh EL Ghetany;*** *Professor of Obstetrics and Gynecology, Ain Shams University, for his guidance, scientific supervision and support. He has generously devoted much of his time and effort helping me throughout the whole work.*

Also, I wish to express my deep gratitude to ***Dr. Amr Hassaan Farag,*** *Lecturer of Obstetrics and Gynecology, Ain Shams University, for his good support, continuous supervision and help during this work.*

I'm very grateful to all the laboratory team in the women's hospital Ain Shams University, for their support, help and cooperation.

I would like to thanks My Patients and Parents for their cooperation and trust, and I wish for all of them the best of health.

All my thanks and loves are offered to my family, for their continuous encouragement and support. I really can't express my thanks and love to all family.

Mohamed Salah Hussein EL Kashif

Introduction

Preterm premature rupture of membranes (PPROM) is a condition where amniotic sac leaks fluid before 37 weeks of gestation without onset of labor ***(Deering et al., 2007)***.

Preterm premature rupture of membranes complicates only 3% of pregnancies but is associated with 30-40% of preterm deliveries and can result in significant neonatal morbidity and mortality, so management of pre-labor rupture of membranes is very important to reduce obstetric complications or unnecessary interventions ***(Marowitz and Jordan, 2007; Helmer, 2006).***

The diagnosis of PPROM is made by a history suggestive of spontaneous rupture of membranes (SROM) followed by physical examination with a sterile speculum examination demonstrating pooling of fluid in the posterior vaginal fornix. Diagnosis of PPROM is difficult when maternal history of PPROM is not supported by vaginal pooling of amniotic fluid or membranes rupture is slight ***(Cunningham and Gant, 2001)***

Ultrasound examination demonstrating Oligohydramnios is also used to help confirm the diagnosis of spontaneous rupture of the membranes.

Many investigations have been used to confirm membranes rupture; the most widely used has been the nitrazine test which detects pH change and Fern test. Unfortunately,

nitrazine paper testing of vaginal pH has an appreciable false positive rate associated with blood contamination, semen or bacterial vaginosis. Fern test has also an appreciable false positive rate.

False positive fern test; false negatives can be due to inadequate amniotic fluid on the swab or heavy contamination with vaginal discharge or blood ***(Gabbe, et al., 2002)***.

These potential limitations have led to the search for biochemical markers for the detection of PPROM. Among the markers evaluated were Beta-HCG in vaginal washing fluid, prolactin, calcitropic hormones and insulin-like growth factor binding protein-1in the cervical-vaginal secretions, but these biochemical markers have limited success rate for the detection of PPROM ***(Esim et al., 2003; Akercan et al., 2005; Shaarawy and El-Minawi, 2004).***

Also, these tests are expensive and have their advantages and disadvantages. Thus, there is no unique and non-invasive gold standard test applicable to all patients with 100% accuracy.

Many Evidences suggest that liver enzyme of AST is produced by the fetus and their concentrations in the amniotic fluid have been shown by different studies ***(Cunningham, 2001; Kuczynska-Sicinska et al., 1989; Smolarczy et al., 1996).***

That is because amniotic fluid in the second half of human gestation is largely a product of fetal urine and an