150 THE RELATIONSHIP BETWEEN PLACENTAL LESIONS OF INFLAMMATION AND SPONTANEOUS PRETERM BIRTH IN TWIN GESTATIONS WITH CERVICAL SHORTENING IN THE SECOND TRIMESTER

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OBJECTIVE: To determine whether inflammatory lesions of the placenta are associated with an increased risk of preterm birth in twin gestations with ultrasonographic findings of cervical shortening in the second trimester.

STUDY DESIGN: Retrospective review of those twin gestations from January 2004 through January 2008 with ultrasonographic assessment of cervical length between 16 and 24 weeks gestation and subsequent pathological examination of the placenta. A cervical length of 2.5cm (10%ile) was used to define a short cervix.

RESULTS: 62 twin gestations were identified with cervical shortening. Of these, 42 (67.7%) patients delivered prior to 37 weeks gestation. Of the 20 patients who delivered at term (37 weeks of gestation), placental examination failed to demonstrate any acute (acute chorioamnionitis or funisitis) or chronic (chronic deciduitis or villitis) lesions of inflammation. Acute inflammatory lesions of the placenta were significantly associated with an increased risk of spontaneous preterm birth (23.8% vs. 0%, p=0.023). There was no significant difference in the frequency of chronic inflammatory lesions of the placenta between the groups.

CONCLUSION: In twin gestations, acute chorioamnionitis of the placenta in association with a shortened cervix together contribute to an increased risk of preterm birth. The finding of a shortened cervix in a twin gestation in the second trimester may have no clinical consequence in terms of risk of spontaneous preterm birth in the absence of ascending infection.

Relationship between placental lesions of inflammation and preterm birth in twins with cervical shortening (n=62)

Placental Lesions	Birth < 37 weeks	Birth ≥ 37 weeks	p value
Acute Inflamm.	10 (23.8%)	0 (0%)	0.0230
Chronic Inflamm.	4 (9.5%)	0 (0%)	0.2952

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151 ASSESSING VAGINAL AMNIOTIC FLUID (AF) FOR LAMELLAR BODIES (LB) AS A PREDICTOR OF FETAL LUNG MATURITY AFTER PRETERM RUPTURE OF MEMBRANES (PPROM)

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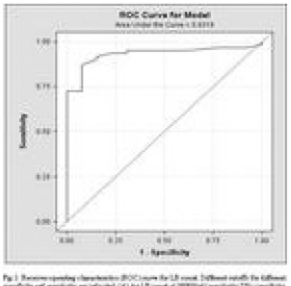
OBJECTIVE: PPROM is a risk factor for cord accident and chorioamnionitis. It is accepted that delivery is justified beyond 34w of gestation. Before 34w, amniocentesis is offered for assessing fetal lung maturity. Aniocentesis is an invasive procedure which harbors a risk of iatrogenic infection and may be difficult in cases of oligohydramnios. The purpose of this study was to validate an alternative non-invasive measurement of LB drawn from a vaginal pool for predicting fetal lung maturity and to set a cutoff for LB concentration above which fetal lung maturity is likely.

STUDY DESIGN: A prospective study was held in which AF specimens were collected from a vaginal pool from pregnant women with PPROM 26-36.6w of gestation. The specimen was processed through a platelet channel of the cellular counter for an LB count. All specimens included were collected within 2d from delivery. The relationship between respiratory distress syndrome (RDS) and LB count was estimated with logistic regression analysis. The ROC curve and the calculation of the area under the curve were determined with intervals of confidence of 95% to establish a threshold value for LB count. Test performance was calculated for sensitivity and specificity.

RESULTS: 75 adequate specimens were collected. The mean gestational age at delivery was 34w (+/−2.5). 13 neonates (17%) developed RDS. The incidence of RDS was decreased significantly with increasing gestational age (p = 0.02). RDS was less common in neonates delivered vaginally compared with cesarean delivery (p = 0.03). The cutoff for LB/ml of which the specificity was 100% was 28,000 with a sensitivity of 42% (figure 1). A count of 8,000 LB/ml or less predicts RDS with a sensitivity of 98%.

CONCLUSION: Assessing AF from a vaginal pool for LB count can be used to rule out neonatal RDS without the need for invasive tests.



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152 UTERINE ELECTROMYOGRAPHY IS COMPARABLE TO INTRAUTERINE PRESSURE CATHETER FOR MONITORING CONTRACTIONS

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OBJECTIVE: Uterine contractions are traditionally monitored by the tocodynamometer (TOCO) which has low sensitivity and specificity, especially in obese patients. The intrauterine pressure catheter (IUPC) can be used to monitor adequacy of contractions but only after amniotomy. The objective of this study was to compare the TOCO and transabdominal uterine electromyography (EMG) to IUPC in term laboring patients.

STUDY DESIGN: Patients were prospectively enrolled if they were >18 yr of age, had singleton pregnancies, and were in labor with an IUPC. Those with infection, antepartum hemorrhage, known fetal anomaly, or a condition needing urgent delivery were excluded. Root mean square (RMS) plot from the uterine EMG signals over a 45 minute period was compared to the IUPC and the TOCO tracing obtained during the same period. The number of contraction events per unit time was determined for each of the devices. Total contraction frequency, number of corresponding contractions and the difference in contraction peak time values were compared using Student-t test or ANOVA as appropriate (significance: p< 0.05).

RESULTS: For TOCO vs. IUPC peaks, the mean peak difference between TOCO and IUPC was 0.74 seconds (SE = 2.61), and it was not significantly different from baseline at alpha=0.05 (P = 0.78; SD 10.6). For RMS vs. IUPC peaks, the mean peak difference between RMS and IUPC was 0.12 seconds (SE = 1.88), and it was not significantly different from baseline at alpha = 0.05 (P = 0.95; SD 13.1). The total contraction frequency and number were comparable between IUPC and RMS (p<0.05). Body mass index > 30 or pitocin augmentation of labor did not affect the RMS signal significantly.

CONCLUSION: In term patients, there is no significant difference between RMS vs. IUPC and TOCO vs. IUPC peaks at = 0.05 level. Transabdominal uterine EMG can be useful non-invasive method to monitor labor in patients with intact membranes.

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153 SPONTANEOUS PRETERM BIRTH: A MATERNAL OR FETAL DISEASE?

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OBJECTIVE: The exact cause of spontaneous preterm birth (PTB) is unclear and racial disparity between groups further complicates its understanding. We used maternal and fetal genetic data and bioinformatic pathway information to identify maternal and fetal genetic contributions to PTB.

STUDY DESIGN: Maternal and fetal DNA samples from African American (AA) and Caucasians (C) in a Nashville cohort was analyzed for 1536 single nucleotide polymorphisms (SNPs) in 130 candidate genes derived from PTB pathways. Single locus analysis was performed to document the association between SNPs and PTB. Kyoto encyclopedia of genes and genomes (KEGG) was used to group gene variants into biological pathways.

RESULTS: Significant differences in SNP associations exist between the two races. A maternal SNP in tissue plasminogen activator gene in C (allelic-$p=2.00x10^{-3}$; genotypic-$p=2.0x10^{-6}$) showed the strongest association. The strongest effect in C fetal DNA was in the interleukin (IL)-10 receptor antagonist gene (allele-p = 0.01; genotype-p = $3.34x10^{-4}$). In AA maternal DNA, the strongest association with PTB was in IL-15 (allele $p=2.91x10^{-4}$; genotype $p=2.0x10^{-3}$) and in fetal DNA it was IL-2 Receptor B SNP (allele p = $1.37x10^{-4}$; genotype p = $6.29x10^{-4}$). Maternal gene variants, especially in compliment/coagulation pathway, were significantly over-represented in C whereas in AA, fetal SNPs were more associated with PTB with fewer contributions from maternal SNPs. The predominant pathway in AA was infection/host inflammatory response pathway.

CONCLUSION: Our findings indicate that whether the genetic risk of PTB is maternal or fetal are affected by race. Hence PTB pathways and interventions should not be generalized. Targeted interventions either to the mother or the fetus based on differences in specific risk factors should be considered.

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