241 **THE PRETERM PREDICTION STUDY: VAGINAL MATRIX METALLOPROTEINASE-9 (MMP-9) LEVELS AND SPONTANEOUS PRETERM DELIVERY IN ASYMPTOMATIC WOMEN** PATRICK RAMSEY[1], BAYANBILEG SHINETUGS[1], ROBERT GOLDENBERG[1]; [1]NICHD MFMU Network, Obstetrics/Gynecology, Bethesda, MD

OBJECTIVE: Elevated serum and amniotic fluid MMP-9, a protein which degrades basement membrane type IV collagen, have been associated with spontaneous preterm delivery (SPD) and membrane rupture (PPROM). We determined whether vaginal MMP-9 levels at 22-24 weeks were associated with SPD and PPROM in asymptomatic women.

STUDY DESIGN: We performed a nested case-control study involving 183 women who had SPD <37 wks and 183 matched term controls (race, parity, recruitment center) from women enrolled in the NICHD MFMU Network Preterm Prediction Study. MMP-9 levels were measured in the vaginal fluid samples collected at 22-24 weeks using a commercially available ELISA. Statistical analyses included the Wilcoxon Rank Sum, Chi-Square, logisitic regression and Spearman correlation analysis.

RESULTS: Vaginal MMP-9 levels at 22-24 wks were slightly higher in women who subsequently had a SPD <37 wks (median: 162 ng/mL [10%tile-90%tile: 19-415]) as compared to matched term controls (142 ng/mL [11-426]; $P = .17$). Within the subset of women who had a SPD secondary to PPROM (n = 85 cases/controls), MMP-9 levels were higher (182 ng/mL [19-424]) as compared to the matched term controls (98 ng/mL [0-464]; $P = .06$). The association between MMP-9 and SPD/PPROM <37 weeks, using a 90%tile cutoff based on the controls, are shown below. MMP-9 levels strongly correlated with the levels of several other cervicovaginal inflammatory markers which were previously characterized in this case-control group (interleukin-6 [r = 0.38, $P = .0001$], defensins [r = 0.58, $P = .0001$], and ferritin [r = 0.53, $P = .0001$]) but not with fetal fibronectin (r = 0.04, $P = .40$).

CONCLUSION: Vaginal MMP-9 levels strongly correlate with other inflammatory markers which are associated with SPD; however, vaginal MMP-9 levels at 22-24 weeks gestation are not significantly associated subsequent SPD or PPROM.

Table

Odds ratios for SPD and PPROM

	SPD OR (95% CI)	PPROM OR (95% CI)
MMP-9	0.9 (0.4-1.8)	0.9 (0.3-2.5)

242 **PATTERNS OF RECURRENCE OF SPONTANEOUS PRETERM BIRTH: THE INFLUENCE OF GENDER** JAMES KELLER[1], TERESA ETTEN[1], BETH WEISENBORN[1], NIKI ISTWAN[2], DEBBIE JACQUES[2], SUZANNE COLEMAN[2]; [1]Lutheran General Hospital, Park Ridge, IL; [2]Matria Healthcare, Clinical Research Dept., Marietta, GA

OBJECTIVE: To evaluate fetal gender as a contributing factor in the etiology of preterm birth (PTB).

STUDY DESIGN: From a perinatal database, women were identified who received outpatient care during 2 pregnancies, of which the index pregnancy resulted in PTB due to preterm labor (PTL). Data were divided into 2 groups. Group 1: First infant delivered preterm (Infant 1), with subsequent term delivery (Infant 2). Group 2: First infant delivered preterm (Infant 1) with subsequent recurrent PTB (Infant 2). Comparison of fetal gender among groups was made using McNemar's χ^2 and Fisher's exact test statistics.

RESULTS: 163 mothers were analyzed. 69 (Group 1) had PTB, then term delivery; 94 (Group 2) had recurrent PTB. Overall, 57.7% of this population had recurrent PTB. Frequency of male gender was significantly greater in isolated PTB vs. term delivery (Group 1) and when compared to a cohort with recurrent PTB (Group 2). No differences were detected in conventional maternal and fetal risk factors such as smoking, marital status, and SGA.

CONCLUSION: Male fetal gender is more frequent in pregnancies complicated by PTB in mothers who subsequently deliver term, suggesting fetal factors may be important in isolated, rather than recurrent, PTB. These data further support the influence of fetal gender as a factor in PTL and PTB.

Table

Differences within and among groups ([1]$P < .05$ vs Infant 1 of same group; [2]$P < .05$ vs Infant 1 of Group 1)

	GROUP 1 INFANT 1 (PTB) N = 69	GROUP 1 INFANT 2 (TERM) N = 69	GROUP 2 INFANT 1 (PTB) N = 94	GROUP 2 INFANT 2 (PTB) N = 94
GA at Del	34.7 ± 3.0	38.3 ± 1.2[1]	34.6 ± 2.3	34.7 ± 2.5
SGA (%)	0	2.9	2.1	1.1
Maternal age (yrs)	27.1 ± 4.9	29.0 ± 4.9[1]	25.4 ± 5.5	27.4 ± 5.7[1]
Male (%)	63.8	33.3[1]	52.1	45.7[2]

Data mean ± SD, or percentage as indicated. *Del.* Delivery.

243 **A NEW BED-SIDE TEST FOR THE PREDICTION OF PRETERM DELIVERY: PHOSPHORYLATED INSULIN- LIKE GROWTH FACTOR BINDING PROTEIN-1 IN CERVICAL SECRETIONS** ARDA LEMBET[1], DERYA EROGLU[1], TOLGA ERGIN[1], ESRA KUSCU[1], ALI HABERAL[1], SREEDHAR GADDIPATI MD[2]; [1]Baskent University, Ankara, [2]Mount Sinai School of Medicine, Obstetrics, Gynecology, and Reproductive Sciences, New York, NY

OBJECTIVE: Phosphorylated insulin-like growth factor binding protein-1 (phIGFBP-1) is secreted by decidual cells and leak into cervical secretions when fetal membranes detach from decidua. Our aim was to assess the detection of phIGFBP-1 in servical secretions to predict preterm delivery in patients at risk.

STUDY DESIGN: In our prospective study, 42 women between 20-36 weeks of gestation with regular, persistent uterine contractions (≥10/hr) and 18 women between 20-36 weeks gestation without symptoms of preterm labor were assessed for the presence of cervical phIGFBP-1. Dacron swabs were applied to cervix and assayed in 5 minutes by using immunonochromatograpy, a new rapid bed-side test (Partus Test, Medix Biochemica, Kauniainen, Finland). Data analysis included one way variance analysis (ANOVA), Student t test, Chi-square and Fisher's exact test.

RESULTS: Of the 42 patients with uterine contractions, 20 had a positive Partus Test and 22 had a negative test. Among the 20 women with a positive test, only one delivered term and other 19 patients delivered preterm. Among the 22 women with a negative test, only five delivered preterm. Mean gestational age at delivery for patients with a positive and a negative test was 33.5 ± 3.9 and 37.1 ± 2.8 weeks ($P < .05$). Sensitivity, spesificity, positive and negative predictive value of the test for preterm delivery was found to be 79%, 94%, 95% and 77%, respectively. When cervical phIGFBP-1 assay was used to predict delivery within 7 days, sensitivity, spesificity, positive and negative predictive value was calculated as 93.7%, 80.7%, 93%, and 95.4%.

CONCLUSION: The presence of cervical phIGFBP-1 is predictive of preterm labor between 20-36 weeks of gestation. Our data shows that cervical detection of phIGFBP-1 by immunochromatography is a rapid and easily applicable test that highly anticipates preterm delivery in patients at risk.

244 **GROWTH POTENTIAL VERSUS MORBIDITY IN PREMATURE NEONATES** RADEK BUKOWSKI[1], GEORGE SAADE[1], JOAN RICHARDSON[2], GARLAND ANDERSON[3]; [1]University of Texas Medical Branch, Obstetrics and Gynecology, Galveston, TX; [2]University of Texas Medical Branch, Pediatric, Galveston, TX; [3]University of Texas Medical Branch at Galveston, Maternal Medicine, Galveston, TX

OBJECTIVE: The percentile of growth potential (GP) is a measure of the actual fetal weight relative to the optimal weight in the absence of pathological conditions. Our objective was to test the hypothesis that individualized growth potential is related to perinatal morbidity in premature newborns.

STUDY DESIGN: Perinatal morbidity and growth potential were determined in 44 preterm deliveries at 23 to 34 weeks. Criteria for inclusion were dating by ultrasound at ≤20 weeks and no medical or obstetrical complications. For each fetus, GROW v.2 software was used to generate an individual optimal growth curve and calculate percentile of achieved growth potential for birthweight based on 6 independent factors (maternal weight, height, parity, ethnicity, fetal gender and gestational age–GA and birthweight-BW) identified as determining fetal weight from multivariate logistic regression analysis of 40,000 uncomplicated term pregnancies. Univariate (Fisher exact test and linear regression) and multivariate analysis using best-model regression were used to assess the relationship between GP and fetal morbidity (length of stay in ICU (LOS), respiratory distress syndrome (RDS), intraventricular hemorrhage (IVH), and sepsis) individually and as a composite morbidity.

RESULTS: Ten out of the 44 (23%) neonates had a GP <10%ile. These infants had significantly more RDS (7/10 vs 9/32; $P = .03$) and ≥1 morbidity (10/10 vs 13/32; $P < .001$). LOS was inversely correlated with GP (adjR2 = -0.14; $P < .005$). On multivariate analysis, however, only LOS remained significantly associated with GP (adjR2 = -0.46; $P = .04$), while RDS and ≥1 morbidity were only associated with BW (adjR2 =0.35; $P < .001$) and GA (adjR2 = 0.65; $P < .001$), respectively.

CONCLUSION: Achieved percentile of individual growth potential inversely correlates with LOS in NICU, a measure of general morbidity. Abnormalities in fetal growth, as detected by individualized assessment, can impact morbidity of premature neonates.