288 NEONATAL MORTALITY IN RELATION TO FETAL SIZE AND GESTATIONAL DURATION IN THE US: THE EFFECT OF PLACENTA PREVIA

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OBJECTIVE: To explore the associations of placenta previa with fetal growth restriction, preterm delivery, and neonatal survival.

STUDY DESIGN: A cohort study comprising livebirths for 1989-91 and 1995-97 cohorts in the US was performed. The national linked birth/infant death records for the US population, based on 22,337,097 singleton pregnancies, was utilized. The diagnosis of previa was restricted to those who were delivered by cesarean. We evaluated birthweight and gestational age-specific risk of neonatal deaths (death within first 27 days of life) in relation to placenta previa. Fetal growth was assessed in centiles of birth weight (<1, 1-2, 3-4, 5-9, 10-19, and thereafter in 10 centile incremements), adjusted for gestational age. All analyses were adjusted for birth cohort effects.

RESULTS: Previa was recorded in 2.8 (n = 62,331) per 1000 births. Neonatal mortality was 15.6 per 1000 births with previa, compared with 4.0 per 1000 among all other pregnancies. Compared with babies born to women without previa, risk of mortality due to previa was lower among those who delivered preterm (<37 weeks) babies. At term, however, neonatal mortality was higher for those with previa than without this condition. This crossover in mortality was also apparent in an analysis by birth weight. Among low birthweight (<2500 g) infants, the risk of neonatal mortality was greater among pregnancies with previa than non-previa pregnancies. Mortality was higher among those with previa than without previa at all growth centile categories. This relative risk progressively increased with increasing weight centiles.

CONCLUSION: The risk of neonatal mortality at term was greater among pregnancies with previa than non-previa pregnancies. Pregnancies diagnosed with placenta previa must be monitored carefully especially as they approach term. Given the increased risk for neonatal deaths, such pregnancies should be considered for delivery before 37 weeks.

289 LABOR DOES NOT AFFECT THE NEONATAL ABSOLUTE NUCLEATED RED BLOOD CELL COUNT

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OBJECTIVE: An increased nucleated red blood cell (NRBC) count is considered as an index of fetal hypoxia. During labor, uterine contractions lead to decreased placental blood flow, inducing relative fetal hypoxia. It is not known whether labor affects NRBC counts. It takes 6-12 hours of fetal hypoxia to stimulate erythropoietin (EPO) and hours for EPO to activate erythropoiesis; we thus hypothesized that infants born after elective CS have NRBC counts similar to those of infants born vaginally.

STUDY DESIGN: We compared absolute NRBC (ANRBC) counts taken during the first 12 hours of life in two groups of term, AGA infants: one group born by elective CS without trial of labor (n = 27); and the other group born by spontaneous vaginal delivery (N = 31). We excluded infants of women with diabetes, hypertension, alcohol, tobacco or drug abuse, mecnium-stained amniotic fluid, and those with fetal heart rate abnormalities, Apgar scores <7, hemolysis, blood loss or chromosomal anomalies. Venous blood samples were analyzed using a Gen-S counter (Coulter Corporation, Hialeah, FL). Differential cell counts were done manually; ANRBC were counted per 100 white blood cells (WBC), then expressed as an absolute number, and the WBC count was expressed as corrected for the presence of nucleated RBCs.

RESULTS: There were no differences between groups in birth weight, gestational age, maternal age, gravidity, parity, maternal analgesia, 1- and 5-minute Apgar scores, and infant sex. The ANRBC, WBC, lymphocyte and platelet counts were strikingly similar in both groups.

CONCLUSION: We conclude that labor does not affect the neonatal ANRBC count. This finding is of medico-legal importance and supports our speculation that physiologic labor does not induce a fetal hypoxemia severe enough or prolonged enough to produce hematological evidence of increased erythropoiesis.

Table

Hematologic data (median, per cubic mm)

	VAGINAL	CESAREAN
WBC	28300	24500
Lymphocytes	6632	6150
Platelets	272000	265000
ANRBC	338	335

290 PATTERNS OF RESISTANCE TO AMPICILLIN IN EARLY-ONSET NEONATAL INFECTIONS

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OBJECTIVE: With the promulgation in 1995 of the CDC guidelines for prophylactic use of antibiotics to prevent early-onset neonatal group B streptococcal sepsis, the use of intrapartum antibiotics has increased dramatically. We hypothesize that this rise in use resulted in an increase in the number of organisms cultured from neonates with early-onset infections that were resistant to ampicillin.

STUDY DESIGN: We reviewed the charts of neonates with a discharge diagnosis of early-onset infections born at our institution during two time periods: prior to (1992-4) and after (1996-9) the release of the CDC guidelines. Only neonates with positive blood, urine, or cerebrospinal fluid cultures obtained within the first seven days of life were included. Charts were reviewed for the types of organisms cultured and their pattern of resistance to antibiotics.

RESULTS: Of the 10,781 deliveries at our institution from 1992-1994, 17 (0.16%) infants had culture proven early-onset infections. From 1996-1999, 32 (0.21%) of the 15,006 infants delivered had similar infections. There was no difference in the median gestational age at delivery between the two groups (31 v. 32.5 weeks, respectively), nor in the incidence of premature rupture of membranes or preterm delivery (<37 weeks of gestation). Fewer neonates were culture positive for gram negative organisms in 1992-1994 compared to 1996-1999, 3 (18%) v. 12 (38%), respectively, although this difference was not statistically significant. We did observe, however, a significant increase in the number of neonates with gram negative organisms resistant to ampicillin when comparing those born in 1992-1994 to those born 1996-1999 ($P = .04$; 0 v. 9 (75%), respectively).

CONCLUSION: Increased use of antibiotics in women on labor and delivery may have significantly contributed to an increased incidence of gram negative organisms cultured from neonates that are resistant to ampicillin.

291 RISK OF FETAL DEATH IN SINGLETON GESTATIONS IN THE UNITED STATES: ARE EXTREMES OF MATERNAL AGE AN INDICATION FOR ANTEPARTUM TESTING?

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OBJECTIVE: To evaluate the independent contributions of young and advanced maternal age on fetal death and compare these risk profiles with other common indications for antepartum testing.

STUDY DESIGN: Retrospective cohort analysis of singleton births between 1995-97 in the United States using linked birth-infant death data was performed. Gestational age <20 weeks and fetuses with anomalies were excluded. Fetal death rates with maternal ages 20-34 years were compared with young (<20 years) and advanced age (35-39 years and ≥40 years) Fetal death rates for common indications for antepartum testing including chronic hypertension (CHTN), pregnancy-induced hypertension (PIH), diabetes (DM) and small for gestational age births (SGA) were evaluated. Independent contributions of young and advanced ages, CHTN, PIH, DM and SGA births for the risk of fetal death were determnined based on multivariable logistic regression models. Relative risks (RR) and 95% confidence intervals (CI) were derived from these models after adjusting for gravidity, race, marital status, prenatal care, education and smoking.

RESULTS: Among the 10,744,648 births, fetal death occurred in 33,695 (0.31%). Fetal death rate and RR for maternal age categories, CHTN, PIH, DM and SGA are shown in the Table. When the analysis was restricted to delivery ≥32 weeks similiar risk profiles were noted.

CONCLUSION: Extremes of maternal age are independently associated with increased risk for fetal death. The magnitude of these risks is similiar to those of other common indications for antepartum testing.

Table

Fetal death rates in singleton gestations

GROUP	TOTAL BIRTHS	DEATHS (N)	RATE	RR (95% CI)
<20	1,405,424	5851	4.2	1.5 (1.4-1.6)
20-34	7,672,581	23,164	2.9	1.0 (Referent)
35-39	1,466,222	3728	3.5	1.2 (1.1-1.3)
≥40	200,421	952	4.8	1.7 (1.6-1.8)
CHTN	69,764	681	9.8	3.3 (3.1-3.3)
PIH	393,268	2062	5.2	1.8 (1.7-1.9)
DM	271,955	1455	5.4	1.8 (1.7-1.9)
SGA	1,030,602	11,085	10.8	5.5 (5.4-5.5)