=1327 REGIONAL CEREBRAL BLOOD FLOW IN THE NEWBORN BABOON.

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To evaluate possible use of the newborn baboons in physiologic and parmacologic studies on cerebral blood flow (rCBF), 6 pre- and near- term newborn baboons, were studied within 2 hrs. following a C-section birth. Mean gestational age was 160/184 days (range 149-168 d) and mean birth weight was 0.89 kg (range 0.69 - 1.06 kg). Polyvinyl catheters were placed on the left ventricle via internal carotid artery, abdominal aorta via femoral artery, and sagittal or internal jugular vein. A magnetic flow probe was also placed around the internal carotid artery. rCBF was measured using 1 of 3 radiolabelled microspheres (^{141}Ce ^{51}Cr ^{85}Sr) with simultaneous determination of arterial and venous blood gases, glucose, lactates, and hemoglobin. The result show that under stable and controlled conditions, the rCBF to 16 different brain regions examined varied considerably. rCBF (ml/100g/min) was maximal in cerebellar peduncles (86.3 ± 21.0) and medulla (70.9 ± 10.8 ml/100g/min). Lesser flow was observed at pons (67. ± 6.7) cerebellum (41.1 ± 9.2), sup. and inf. colliculi (35.0 ± 6.6), thalamus (29.4 ± 7.3), parieto-temporal lobes (29.1 ± 11.2) and frontal lobe (20.6 ± 4.2). A positive correlation was noted between rCBF and O_2 consumption showing that metabolically active brain regions are better perfused. No correlation between rCBF and gestational age or birth weight was noted suggesting that rCBF does not change substantially during the last quarter of gestations.

1328 NEONATAL CEREBRAL HEMORRHAGE (CH)/HEMODYNAMICS AND OUTCOME.

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To correlate the severity of CH and its associated cerebral hemodynamic changes with long-term outcome, we prospectively evaluated survivors with birth weight ≤1500 gm. The population was drawn from 155 low birth weight inborn infants who were assessed for CH by echoencephalography and for abnormal cerebral blood flow velocity (CBFV) patterns by Doppler ultrasound technique. Of these 155 infants, 100 survived; 70 returned for child development evaluation at a mean age of 16 ± 5 mo; in 40, valid Bayley scores were obtained. The incidence of neurological handicaps was higher with those with CH (47%) vs those with no CH (26%). The table shows that incidence of moderate to severe handicaps was highest with Grade 3-4 CH.

Handicaps:	Normal	Mild	Moderate/Severe	
No CH	17	5	1	$X^2 = 15$
Grade 1-2	10	7	1	df = 4
Grade 3-4	15	3	11	p <.005

Abnormal neurological findings were observed in 13/42 (31%) who had normal CBFV patterns and in 15/28 (54%) who had pulsatility index values ≥.90 during the first week of life (p <.10 >0.05). The mean mental development index (MDI) corrected for gestational age was 84 ± 24 in the CH and 96 ± 12 in no-CH group. 10/24 had MDI <80 in the CH babies compared to 0/15 in no-CH babies (X^2 = 8.4 df = 1 p <.005). Preliminary data show that the severity of CH and abnormal CBFV patterns appear to correlate with long-term outcome.

†1329 EFFECT OF MATERNAL DIABETIC CONTROL ON NEONATAL MORBIDITY,

Jeanne L. Ballard, John B. Butler, Menachem Miodovnik, Jane C. Holroyde, Tariq A. Siddiqi, Stanley J. Stys, Reginald C. Tsang, University of Cincinnati.

To determine the effect of timing and degree of diabetic control on neonatal morbidity, 115 insulin-dependent diabetic (IDDM) pregnancies were prospectively studied. Patients enrolled prior to 9 weeks gestation were randomly assigned to one of two groups with these management goals: I - strict control (FBS 60-80 mg%, 90 min postprandial BS < 120) or II -customary control (FBS 80-100 mg%, 90 min PPBS < 140). A group enrolled after the first trimester (III) was managed identically to Group II. A nondiabetic group (IV) matched for race, gestational age, type of delivery and sex of neonate was analyzed for comparison. The following table lists percent incidence of neonatal complications:

	n	RDS (*)	Hypoglycemia (< 30 mg%)	Hyperbilirubenemia (> 13 mg%)	Polycythemia (> 65%)	Macrosomia (> 90%ile)	Apgar < 7 (1 min)	Apgar < 7 (5 min)
I	(45)	4.4	17.8 >b	22.2	11.1	37.8	11.6	0
II	(48)	10.4	41.7	20.8	18.8	33.3	10.6 >c	0
III	(22)	4.6	31.8	9.1	4.6	40.9	57.1	10.5
IV	(262)	1.0 a	8.3 a	10.7 a	3.2 a	9.2 a	32.5 a	11.9 a

We conclude that: 1) strict control reduces the incidence of hypoglycemia; 2) early control reduces birth asphyxia regardless of the type of control; 3) timing and type of diabetic control do not appear to affect the other neonatal complications listed.

*Clinical, chemical and radiographic criteria. a - IDDM vs. control, p < 0.05; b - strict vs. customary, p = 0.01; c - early vs. late, p < 0.001

†1330 LONG-TERM OUTCOME AFTER PRENATAL GLUCOCORTICOID THERAPY IN VERY-LOW-BIRTHWEIGHT (VLBW) INFANTS.

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Prenatal glucocorticoid therapy (Gluc-Rx) accelerates lung maturation, reduces neonatal mortality and decreases the incidence of severity of RDS in preterm infants. Long-term neurological and developmental follow-up has shown no abnormalities in LBW infants (≥ 1900 g). We report the long-term outcome of Gluc-Rx in 96 VLBW infants studied at preschool (5 yr, n = 52) or school age (7 yr, n = 44). We found no difference between Gluc-Rx and unRx infants in growth or incidence of height, weight or head circumference < 5th percentile.

	Inborn Gluc-Rx	Inborn Gluc-UnRx	Outborn Gluc-Rx	Outborn Gluc-UnRx
n	25	11	11	49
BW (g ± SD)	959 ± 142	1039 ± 172	1035 ± 151	1036 ± 160
Neuro Abnormalities:				
Mild	2 (8%)	1 (9%)	1 (9%)	5 (10%)
Mod-Severe	1 (4%)	0 (0%)	1 (9%)	5 (10%)
Developmental Scores	97	98	90	95

(Developmental scores are median scores on McCarthy GCI for preschool and WISC-R, IQ for school age children.)

Outborn infants were more likely to have some degree of mild or significant neurodevelopmental abnormalities than inborn infants (37% vs 19% and 15% vs 6%, respectively). Prenatal glucocorticoid therapy had no deleterious effects on long-term growth or neurodevelopmental outcome in VLBW infants.

†1331 INFLUENCE OF CONTINUOUS TRANSCUTANEOUS OXYGEN MONITORING ON THE INCIDENCE OF RETINOPATHY OF PREMATURITY (ROP):

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In order to determine whether maintaining the PaO_2 between 50-70 mmHg by continuous $TcPO_2$ monitoring could reduce the incidence of ROP, 296 infants with birth weight ≤ 1300g requiring O_2 therapy from the first week of life were randomly assigned to a continuous monitoring (CM) or a standard care group (SC). CM group infants had $TcPO_2$ monitoring for as long as they required supplemental O_2. SC group infants had $TcPO_2$ monitoring only during the more acute stage of their disease after which their PaO_2 was monitored by intermittent sampling. Management of both groups was otherwise identical. 101/148 infants in the CM and 113/148 in the SC group survived. A conclusive positive or negative ROP diagnosis was made after a minimum of two eye examinations in 87 CM and 102 SC surviving infants. Mean birth weight and gestational age were the same in both groups (CM, 1038g, 29.7 wk; SC 1034g, 29.7 wk). The proportions of infants with neonatal asphyxia, RDS, those receiving indomethacin and blood transfusions were also similar in both groups. The incidence of ROP was similar in both groups, 43/87 CM vs 61/102 SC. Only in infants ≥ 1000g was ROP less frequent in CM than in SC group (15/53 vs 30/62 p=.045). Grades III-V cicatricial RLF occurred in 1 CM and 3 SC infants. Continuous oxygen monitoring may reduce the incidence of ROP in infants ≥ 1000g BWT. Supported by NEI Grant #EY03513-01

1332 UREAPLASMA UREALYTICUM AND NEWBORN RESPIRATORY DISTRESS.

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Ureaplasma urealyticum (Uu) commonly inhabits the vaginal tract of pregnant women and is known to be transmitted to the fetus and newborn. Tissue invasiveness by this organism has been suspected on the basis of the association between its presence and PMN infiltration of placental membranes, fetal surfaces and umbilical cord. This on-going study provides data concerning incidence, duration of positive culture, and clinical course of newborn infants with respiratory distress (RD) whose respiratory tracts are inhabited by this organism. To date, 65 infants GA 24-42 weeks with RD requiring mechanical ventilation (MV) had tracheal aspirate (TA) collected for Uu. 13 infants (20%) were positive. 1 infant remained positive after completion of erythromycin therapy. 6 of 10 infants that grew Uu had 2 or more TA's. 3 of 10 that grew Uu expired. 4 of 7 survivors and 1 of 3 who expired developed chronic lung disease (CLD) as defined by the need for MV and/or O_2 > 30 days. The 3 survivors who did not develop CLD required MV and/or supplemental O_2 for 4-23 days. Uu is commonly found in the respiratory tracts of critically ill infants with RD and persists for weeks. Its pathogenicity and the clinical course of infants who have antimicrobial therapy directed specifically towards this organism remain to be determined.