†1405 OUTCOMES FOR AGA AND SGA VERY LOW BIRTHWEIGHT INFANTS CONTROLLING FOR GESTATIONAL AGE.

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Follow-up of infants <1.5kg (VLBW) has focused predominantly on birthweight(BW) rather than gestational age(GA). We sought to determine the impact of intrauterine growth retardation on 3 year outcome, controlling for GA. Of 182 VLBW born in 1977-1978 and followed to 3 years of age we were able to match only 17 pairs of appropriate for GA (AGA) and small for GA (SGA) infants by: GA (within 1 week), race, sex, multiple birth and social class. SGA was defined as BW <-2SD for gestational age at birth, excluding congenital malformations or infections.

No significant differences were documented in maternal age, education, perinatal risk, method of delivery or neonatal course including Apgars, RDS, apnea, jaundice and sepsis.

	GA (wks)	BW (kgm)	BW <1kgm	3 yr IQ mean	WT <-2SD	HC <-2SD
AGA (n=17)	30.4±2	1.3±.2	3	90.5±17	3(18%)	1(6%)
SGA (n=17)	30.7±2	1.0±.2	9	92.7±16	9(53%)	6(35%)
		p<.003	p<.02	NS	p<.05	p<.05

The incidence of chronic disease(AGA 2,SGA 3), neurologic abnormality(AGA 1,SGA 0) and mean 3 yr IQ, was similar; however, more SGA children had a subnormal (<-2SD) weight(WT), height and head circumference(HC) (p<.05) at 3 years. Within the SGA group, the IQ of those(11) with a normal HC was 96±11 vs 86±12 for those(6) with a subnormal HC at 3 years.

Thus, despite growth failure in 53% of SGA with differential effects of subnormal HC growth on IQ, grouped data reveals comparable neurodevelopmental outcomes among SGA and AGA infants.

1406 INTRAVENOUS NITROGLYCERIN (NTG) IN THE TREATMENT OF PERSISTENT PULMONARY HYPERTENSION OF THE NEWBORN (PPHN).

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We report the use of intravenous NTG in a 2600 gram, 37-week gestational age newborn with PPHN unresponsive to hyperventilation(HV). The diagnosis of PPHN was made based on unexplained hypoxemia, initial positive response to HV, and evidence of a ductal level right-to-left shunt. After repeated transient responses to HV and pancuronium therapy, the Pa_{O_2}/Fi_{O_2} dropped to 53. An IV continuous infusion of NTG was begun at 5.9 mcg/kg/min. at 45 hours of age. The infusion was increased in a stepwise manner to 13 mcg/kg/min. After each increase, a transient elevation in Pa_{O_2}/Fi_{O_2} occurred. After the increase to 13 mcg/kg/min., and without any alteration in ventilatory settings, a sustained rise in Pa_{O_2}/Fi_{O_2} to 242 was noted. No significant changes in CVP (5-6 cm H_2O) or arterial blood pressure(mean= 54-59 mm Hg) pre- or post-NTG were seen. NTG was stopped by Day 4, pancuronium and HV by Day 5, and assisted ventilation by Day 9. He was discharged home on Day 19. Twelve month follow-up is normal.

Intravenous nitroglycerin may be as effective a pulmonary vasodilator in the treatment of neonates with PPHN and may be used with significantly less side effects than seen with tolazoline. Further clinical trials will be necessary to establish its efficacy.

1407 CANDIDA COLONIZATION AND INFECTION IN VERY LOW BIRTHWEIGHT (VLBW) IN THE INTENSIVE CARE NURSERY (ICN).

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Systemic candidiasis is a serious problem in the VLBW(≤1500g) infant. We carried out a prospective study(1.84-10.84) of Candida colonization(col.) of 251 infants admitted to ICN. All had serial cultures obtained from the mouth, groin, umbilicus and perirectal area on Days 1, 3, 7, and weekly until discharge and other cultures as clinically indicated. Forty-nine(19%) of these infants had positive cultures for Candida: C.albincans 28(58%), C. parapsilosis 18(38%), and C. glabrata 2(4%). However, in VLBW infants, col. with C. parapsilosis was as common as with C. albicans. Col. rates were higher in VLBW infants (47% v 14% p<.05) and gestational age was lower in the col. v noncol. VLBW infants (28.7 v 31.5 wks p<.02). Initial site of col. was the perirectal and/or groin area in 16 of 18 (89%) of the VLBW group.

Three of the 10(30%) colonized babies <1000g birthweight developed candidemia:2-C.albicans, 1-C.parapsilosis. There was no CNS involvement.

The use of surveillance cultures for Candida of the perirectal and groin areas may enable more rapid identification of VLBW infants at greatest risk for systemic candidiasis and result in more rapid diagnosis of systemic infection in these infants.

1408 PROSTAGLANDINS AND SYSTOLIC TIME INTERVALS (LVSTI) IN THE DIAGNOSIS OF PATENT DUCTUS ARTERIOSUS (PDA).

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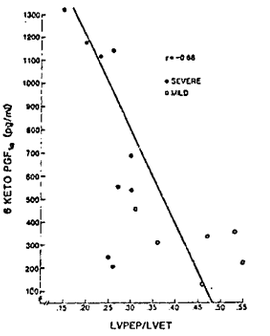
The ductus arteriosus of the premature neonate is exquisitely sensitive to prostaglandins. Dilator prostaglandins 6 keto $PGF_{1\alpha}$, a stable metabolite of prostacyclin, and PGE_2 were measured by RIA in 15 infants with PDA. Left ventricular systolic time intervals (LVSTI) were measured by M-mode echocardiography. LVSTI ≤ 0.30 are associated with clinically significant ductal shunting. Mean 6 keto $PGF_{1\alpha}$ levels in infants with more severe shunting (LVSTI≤ 0.30) were significantly higher than in those with a moderate level of shunting (776 ± 432 vs. 302 ± 115 pg/ml; $p<0.05$). Furthermore, a significant correlation was found between the extent of elevation of 6 keto $PGF_{1\alpha}$ and of decrease in LVSTI suggesting that both reflect the severity of left to right shunting. Elevated PGE_2 levels and LA/Ao ratios, on the other hand, were not correlated with PDA severity.



●1409 BRAIN BLOOD FLOW ALTERATIONS DURING PROLONGED RESPIRATORY ALKALOSIS (RA).

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Hypocarbic RA acutely reduces brain blood flow (BBF) by 40-50%, however, most evidence in adult subjects suggests BBF normalizes during prolonged hypocarbia. We investigated the time course of this change in hyperventilated (HV) newborn piglets. Cardiac output (C.O.) and BBF (n=8) were determined by the microsphere method and brain oxygen consumption (VO_2) and extraction (EO_2) measured from the sagittal vein. Following baseline (B) ($PaCO_2$ 35-40) determinations, RA ($PaCO_2$ 15-20) was induced by hyperventilation. Measurements were repeated at 30, 60 and 120 minutes.

	B	30"	60"	120"
C.O. $ml \cdot min^{-1} \cdot kg^{-1}$	398±158	311±97	382±135	408±153
BBF $ml \cdot min^{-1} \cdot 100\ gm^{-1}$	91±15	54±18*	63±18*	65±16*+
VO_2 $ml \cdot min^{-1} \cdot 100\ gm^{-1}$	5.5±0.5	4.8±0.5*	5.7±0.6+	5.8±0.8+
EO_2 %	51±8	76±10*	77±8*	74±10*

M±SD ANOVA *p <0.01 compared to B; + p <0.01 compared to 30"

Similar timed measurements in control piglets ($PaCO_2$ 35-40) showed no significant variation over time. Acutely (30"), RA decreased BBF (40%), but this degree of vasoconstriction was not maintained. EO_2 was maintained at a consistantly elevated level during RA. Thus, VO_2 initially decreased but then returned to B. We speculate that RA induced a maximal increase in EO_2, with the late increase in BBF representing a vascular escape phenomenon which serves to preserve VO_2.

●1410 TREATMENT OF EXPERIMENTAL NEONATAL E.COLI K1 SEPSIS AND MENINGITIS WITH INTRAVENOUS IMMUNE GLOBULIN.

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E.coli is a leading cause of infection in neonates and in many cases antibiotics alone are ineffective. Therefore, we tested the effect of intravenous immune globulin(IVIG) on neutrophil(neut) kinetics and survival. When 10^4 E.coli K1/gm body wt was given transthoracically(TT) to 37 newborn rats, all died. Five of 6 blood cultures were positive(+) after 30 min; all were + in 2h. Spinal fluid was + in 1/6 by 30 min, in 2/6 by 2h, and in 7/7 by 6h. When 2.5 cc/kg of intraperitoneal IVIG was given simultaneously with TT E.coli, 8/18(44%) lived, with 5 cc/kg 14/17(82%) lived, with 20 cc/kg 17/18(94%) lived, and with ≥30cc/kg 34/34 (100%) survived. IVIG recipients(30 cc/kg) released neut from their reserves more rapidly than did controls (after 2h neut reserve=$4.9\pm0.7 \times 10^6$ vs $8.1\pm0.8 \times 10^6$ in controls, x±SEM,p<0.01). IVIG recipients did not become neutropenic ($2.7\pm0.4 \times 10^3$ neut/mm^3 vs $0.2\pm0.1 \times 10^3/mm^3$ 22h after inoculation, p<0.001), nor did they completely exhaust their marrow neut reserve ($3.3\pm0.5 \times 10^6$ vs $1.4\pm0.3 \times 10^6$ after 22h, p<0.005). When IVIG was delayed for 12h after TT E.coli, 3/17(18%) lived but when ampicillin (200 mg/kg/day) and gentamicin (5 mg/kg/day) were given at 12h instead of IVIG 11/17(65%) lived. When both IVIG and antibiotics were given, 12/14(86%) survived. When treatment was delayed for 16h, 5/17 (29%) antibiotic vs 1/17(6%) IVIG recipients lived, but 13/22 (59%) which received both survived. Thus, IVIG facilitated marrow neut release, prevented neutropenia and marrow neut exhaustion, diminished mortality, and enhanced the effect of antibiotics.