1505

INTRAVENTRICULAR HEMORRHAGE (IVH), VENTRICULAR ENLARGEMENT (VE) & OUTCOME. Jack Sills, Raul Bejar, Sami Ikonen, T.A. Merritt, Ron Coen, Jill Trice, Hector James. Univ. of Calif., San Diego, Depts. of Ped., Neurol., & Neurosurg. La Jolla, Calif.

We prospectively evaluated 116 infants 35 wk GA with IVH. They were followed with serial ultrasound studies to document VE. There were 23 (20%) neonatal deaths. Of the 93 survivors with IVH 69 (75%) had VE (40% mild; 60% mod. or severe). Infants with mild VE spontaneously resolved. Twenty of 41 infants with mod. or severe VE had progressive VE (PVE). Only survivors with grade 3 (46%) & grade 4 (75%) IVH had PVE. Three of 20 infants with PVE responded to serial lumbar punctures & 17 of 20 required ventricular shunting (VPS). Neurodevelopment assessment in infants surviving 1-3 yr with grade 3 & 4 IVH were classified as follows:

Grade IVH	N	#Followed	Normal	Mild	Moderate	Severe
III No PVE	12	6	3	3	0	0
IV No PVE	3	3	0	1	1	1
TOTAL	15	9	3(33%)	4(45%)	1(11%)	1(11%)
III & PVE	11	7	0	0	4	3
IV & PVE	9	8	1	2	3	2
TOTAL	20	15	1(7%)	2(13%)	7(47%)	5(33%)
III+PVE+VPS	10	7	1	0	1	5
IV+PVE+VPS	7	5	0	0	1	4
TOTAL	17	12	1(8%)	0	2(17%)	9(75%)

Seven of 9 infants with grade 3 & 4 IVH w/o PVE had normal or mild deficit on neurodevelopmental exam. PVE requiring VPS was associated with moderate or severe outcome in 11 of 12 infants. (Supported by the March of Dimes & U.S. Dept. of Education)

1506

TIMING & INCIDENCE OF INTRAVENTRICULAR-SUBEPENDYMAL HEMORRHAGES (IVH/SEH) IN INBORN PRETERM INFANTS. Sami Ikonen, Roy Davis, Jack Sills, Raul Bejar, T.A. Merritt, Ronald Coen. Univ. of Calif. San Diego, Dept. of Ped. La Jolla, Calif.

All 184 inborn infants ≤ 34 wks GA (mean 30 wks) were examined with ultrasound (US) to study timing, incidence & evolution of IVH/SEH. Incidence by BW: ≤ 1000 gm, 77%; 1001-1250 gm, 47%; 1251-1500 gm, 47%; 1501-2000 gm, 62%. On day 1 96% (177) had US exams; 60% by 6 hrs. of age. Mean time of initial diagnosis was 12 hrs. & mean time of initial bleeding or extension after day 1 was 64 hrs.

	IVH/SEH Incidence & Extension					
	N	Grade IVH (%)				
Incidence	184	16	18	20	9	63%
Distribution	116	26	28	31	15	
Incidence Day 1	177	31	16	7	4	58%
Distribution	103	53	28	12	7	
Extension after day 1	50	49	38	17	-	48%

Hydrocephalus occurred in 17% and porencephaly occurred in 8% of all infants with IVH/SEH.

SEH/IVH was present on 1st day in 103/116 (89%) infants. Nearly half of these infants extended their hemorrhages by day 2 or 3. Only 13 (11%) of the infants without IVH/SEH on day 1 bled on subsequent days. IVH/SEH was observed in 18 of 29 (62%) infants weighing between 1500-2000 gm. (Supported by March of Dimes & U.S. Dept. of Education).

1507

A COMPARATIVE ANALYSIS OF NEONATAL MORTALITY IN MILITARY AND CIVILIAN INSTITUTIONS. Franklin R. Smith and James S. Rawlings. (Spon. by James W. Bass). Tripler Army Medical Center, Dept. of Pediatrics, Honolulu.

We statistically compared neonatal mortality data from Tripler Army Medical Center (TAMC) to those recently reported from the University of Colorado Health Sciences Center (UCHSC). TAMC delivery and neonatal death summaries from 1977 through 1981 were reviewed: 17,102 live births and 102 in-born deaths occurred. These results were compared to similar data obtained from 14,413 births and 252 deaths at UCHSC from 1974 through 1980. Premature deliveries were less common at TAMC, possibly resulting from fewer high-risk pregnancy referrals: 0.57% were born before 29 weeks gestation at TAMC, compared to 1.61% at UCHSC. Fifty-three percent of the neonatal deaths at TAMC and 54% at UCHSC occurred in this category. The overall neonatal mortality rate was 0.67% at TAMC, in contrast to 1.75% at UCHSC. However, analysis of mortality in relation to birthweight, gestational age, and combined BW-GA categories developed by UCHSC revealed no significant differences between TAMC and UCHSC (Table). We conclude that in terms of outcome, neonatal care delivered at TAMC is similar to that delivered in a prestigious civilian institution.

Zone	Mortality by Combined BW-GA Category	
	TAMC	UCHSC
1	29/16175 (0.2%)	26/12414 (0.2%)
2	1/331 (0.3%)	6/599 (1.0%)
3	5/249 (2.0%)	8/494 (1.6%)
4	8/181 (4.4%)	28/436 (6.0%)
5	16/91 (18%)	51/255 (20%)
6	10/28 (36%)	37/95 (39%)
7	3/6 (50%)	27/43 (63%)
8	36/47 (77%)	69/77 (90%)

1508

IMPROVED 2-YR OUTCOME OF PREMATURE INFANTS WITH MAJOR INTRAVENTRICULAR HEMORRHAGE. Yolande Smith, Anita M. Sostek, Kathy Katz, K.N. Siva Subramanian, Edward Grant (Sponsored by P.L. Calcagno). Department of Pediatrics, Georgetown University Medical Center, Washington, D.C.

Portable cranial sonography was performed serially on 137 infants weighing 1750 or less at birth and admitted to the intensive care nursery from January 1980 to December 1981. Hemorrhage was graded by a modified Papile's classification with Grades I&II considered Minor and III&IV designated Major. Forty-nine infants were diagnosed with major IVH.

Full developmental evaluation was done at 3, 6, 9, 12, 18 and 24 months on 23 (70%) of the 31 survivors of major IVH using Bayley Scales of Motor (PDI) and Mental (MDI) Development and a standard neurological examination. Bayley scores were corrected for gestational age; scores >84 were considered normal. At 2 years Mental evaluations were normal in 18 infants (80%) and motor scores were normal in 15 (65%), although there was persistent mild neurological deficit in 11 infants (48%). Sixteen infants (70%) were functioning within normal limits at 2 years of age. There was significant improvement of motor scores in the 2nd year of life; normal mental scores with or without normal motor scores at 1 year of age tended to predict normal mental and motor functioning at 2 years of age.

The outcome of premature infants with major IVH is not as grim as previously reported, with 70% of the infants in our group normal at 2 years of age. Caution must be exercised in making drastic medical decisions on the basis of the severity of IVH alone.

1509

DO LEUKOTRIENES (LT) CONTROL PULMONARY BLOOD FLOW (PBF) IN THE FETAL LAMB? Scott J. Soifer, Robert Loitz, Christine Roman, and Michael A. Heymann. Univ. of Calif., Dept. of Peds. and Cardiovascular Res Inst, San Francisco

Pulmonary vascular resistance (PVR) is elevated in the fetus to maintain a low PBF. Lipooxygenase products of arachadonic acid metabolism, including LTC₄ and LTD₄, are potent pulmonary vasoconstrictors in adult animals. To evaluate whether LT contributes to the control of PVR and PBF in fetuses, the effects of LT inhibition were studied in 7 chronically instrumented fetal lambs. Catheters were placed to measure PBF by radioactive microsphere techniques, pulmonary arterial pressure (PAP), and heart rate (HR). 5 fetuses received 1mg/kg (est) followed by 100ug/kg/min infusion for 60 min, of FPL 55712 (Fissons, LTD), a LT receptor antagonist. During the infusion, PBF increased from 118±88 to 202±133 ml/100g/min ($P<0.05$) PAP increased from 55±4 to 58±5mmHg and HR increased from 164±8 to 177±20/min ($P>0.05$). After infusion, PBF decreased to 70±22 ($P<0.05$). Arterial blood gases and saturation were unchanged. 2 fetuses received an infusion of LY 83583 (Eli Lilly & Co), an inhibitor of LT release. Similar increases in PBF, PAP, and HR were seen. Tracheal fluid of fetal lambs contains LT. Since LT inhibition increases PBF in the fetal lamb, LT may be important in a maintaining low PBF and elevated PVR in the fetus.

†1510

PH, NOT PCO₂, DECREASES HYPOXIC PULMONARY VASOCONSTRICTION (HPV) IN THE NEWBORN LAMB. Michael D. Schreiber, Michael A. Heymann, and Scott J. Soifer, Univ. of Calif., Cardiovascular Research Institute and Dept. of Peds., San Francisco.

During HPV, respiratory alkalosis (Resp Alk) lowers pulmonary arterial pressure (PAP) and pulmonary vascular resistance (PVR). The mechanism of this effect was studied in 7 hypoxic (PaO₂ 30-35), ventilated anesthetized lambs, 4-7 days of age. Ventilator rate and pressures were held constant. pH and PCO₂ were varied independently using 5% CO₂ and infusion of HCl or NaHCO₃. Resp Alk (high pH, low PCO₂) and metabolic alkalosis (Met Alk) (high pH, normal PCO₂) lowered PAP, PVR, and cardiac output (CO). Effects of Resp Alk and Met Alk did not differ ($P>0.05$). Hypocapnea (normal pH, low PCO₂) decreased CO and increased PAP and PVR. Resp Alk, Met Alk, and Hypocapnea lowered systemic arterial pressure.* The effect of hyperventilation-induced Resp Alk on HPV appears to be mediated through pH rather than PCO₂.

	pH	PCO ₂	PAP	PVR	CO
Normal	7.32-7.44	34-45	43±6	123±80	0.36±.11
Resp Alk	7.54-7.67	17-24	27±6*	89±56*	0.29±.08*
Met Alk	7.54-7.67	34-45	28±4*	84±36*	0.32±.11
Hypocapnea	7.32-7.44	17-24	46±6	198±72	0.21±.05*

PAP-mmHg; PVR-mmHg/L/min/kg; CO-L/min/kg

* significantly lower than Normal ($P<0.05$)