

**1033** MONITORING HYPERBILIRUBINEMIA (HBR) IN PRETERM INFANTS. Timos Valaes & Marilyn Hyte. Dept. of Ped., Tufts-New Engl. Med. Center Hosp., Boston, MA. Total bilirubin (BR)/Total plasma protein ratio was determined ("AO Bilirubinometer and TS meter"-0.075ml of blood) for monitoring HBR in 159 ill preterm infants. In addition, the presence of loosely-bound BR was determined by Sephadex column (0.25ml of blood) whenever indicated by the value of the ratio or the condition of the infants. The urine was also tested with "Ictotest" to exclude significant levels of plasma direct BR. Marked difference existed in the frequency of Seph(+) tests between infants of  $\leq 32$  and those of  $> 32$  wks of gestation.

Wks. of Gest.	No. of infants		Percentage of Seph(+) samples					All
	Seph(+)	ET	$\leq 2.0$	2.01-2.5	2.51-3.0	3.01-3.5	$> 3.5$	
$\leq 32$	13	3	3.1%	7.6%	25.4%	26.3%	50%	17%
N=53	(25%)	(5.6%)	(32)*	(52)	(52)	(19)	(10)	(164)
33-36	1	-	0	0	0	6.2%	0	1.1%
N=43	(2.3%)	-	(9)	(28)	(38)	(16)	(1)	(92)

\*In parenthesis number of samples  
Albumin (lg/kg) was infused in 13 Seph(+) infants. In 2 the test continued to be (+) and were exchanged transfused (ET), in the rest Seph(-) was obtained 30' following the infusion. None of the survivors and none of the 5 infants that died showed evidence of kernicterus.

**1034** EXPERIENCE WITH NEONATAL THROMBOCYTOPENIA. Rohitkumar Vasa, Paulette Smedresman, Roberta Perlman, Margaret Karparkin, Lois L. Neumann. New York University Sch. of Med., Dept. of Ped., New York.

Thrombocytopenia (TP) (Platelets  $< 100,000/\text{cmm}$ ) occurred in 118 of 528 infants (22%) admitted to Bellevue Hospital High Risk Infant Center 7/1/74-6/30/76. Possible etiologic factors were found in only 40 cases (34%): maternal thiazide 5, Immunologic 10, post exchange transfusion 10, DIC 15.

Of TP babies 45.3% weighed  $< 1500$  gm (cf. 22% of total admissions) and 24% were SGA. The majority had significant morbidity: Apgar  $< 4$  (1 min) 20.5%, RDS 43.5%, meconium aspiration 10.2%, NEC 2.5%, systemic bacterial infection 14.5% (sepsis and/or meningitis) 12, and pneumonia in 5 infants). Phototherapy was used in 58%. Umbilical catheters were placed in 68% of infants of which 1/3 developed some clinical evidence of vascular occlusion.

Mortality was 37.3% (44/118) and was greater among those with  $< 50,000$  platelets. Of 33 autopsied babies 23 (84.8%) had significant hemorrhage, compared to 12/19 non-TP babies (63%) in the same period. Micro-thrombi indicating DIC were seen in 11 TP babies.

TP is common in high risk infants. It is most common in very small infants and is usually associated with serious illness. An apparent trend toward greater incidence of hemorrhage in TP babies was not statistically significant. The cause of TP is unknown in most cases.

**1035** CONTINUOUS POSTNATAL HEART RATE MONITORING IN THE NEWBORN. D. Vidyasagar, U.O. Asonye, J. Bolzendahl. Dept. Ped., ALM, University of Ill., Chicago, Ill.

We investigated the value of continuous postnatal heart rate monitoring and relationship of beat to beat variability to infant's outcome using a Hewlett-Packard cardiorespirograph. 123 infants (52 healthy, 36 sick term & 35 sick preterm) were monitored from birth to 72 hrs. Highest (H), & lowest (L) rates were obtained visually from the tracing at 10 intervals. Data thus obtained was entered on computer sheet, and mean H,L rates and variability (V) at 5 hr, intervals calculated. Results are shown.

Age in hours		1-6	19-24	43-48	67-72
Normal Term	H-L	143-113	147-115	159-116	165-121
n (52)	V	30	32	43	44
Sick Term	H-L	143-127	156-124	152-118	157-113
n (36)	V	16	32	35	44
Preterm Lived	H-L	151-135	155-133	160-137	158-134
n (20)	V	16	22	23	24
Preterm Died	H-L	167-159	158-146	150-139	-
n (15)	V	8	12	11	-

Infants with V of  $< 15$  had poor outcome, V of 15-25 was associated with mild to moderate illness & recovery V of  $> 25$  had good prognosis. A drop in variability occurred with clinical deterioration. 6/26 infants who had fetal recording during labor showed abnormal pattern of fetal heart rate. 5 had persistent postnatal decreased V, 3/5 died. These data suggest that continuous postnatal monitoring provides important information regarding prognosis of the infant.

**1036** CARDIOVASCULAR RESPONSES TO INTRAVENTRICULAR HEMORRHAGE IN NEONATAL PIGLETS. Elliott Weinhouse, Norman Gootman, Barbara J. Buckley, Phyllis M. Gootman SUNY at Stony Brook, Health Sciences Center, Long Island Jewish-Hillside Medical Center, Division of Pediatric Cardiology, New Hyde Park, New York

In view of the prevalence of intraventricular hemorrhage (IVH) as a cause of neonatal demise, the cardiovascular responses to experimental IVH were studied. 18 piglets ranging in age from birth to 16 days were anesthetized with 0.25% halothane in an  $\text{N}_2\text{O}-\text{O}_2$  mixture and artificially ventilated. Blood gas parameters were controlled. Aortic pressure (AoP), spinal fluid pressure (SFP), heart rate (HR), and femoral, renal and carotid flows were recorded continuously. IVH was simulated by serial injections of 0.5 ml of blood into the right lateral ventricle. Norepinephrine was used to test responsiveness of peripheral receptors. Age-dependency of effects was evaluated statistically for all parameters. A total of 4.0 ml IVH with at least 70% increase in SFP led to a maximum of 59% increased mean AoP; and 50% increased HR in all piglets younger than 5 days of age. Renal resistance (R) increased at all ages but femoral R did not. Carotid R increased  $16.0 \pm 3.9$  in animals 4 days old or less and  $49.6 \pm 10.4$  in one week old animals. Immaturity of the cardiovascular regulatory system was apparent as an absence of the adult pattern of response to increased SFP during IVH in the piglets. There was a precipitous fall in cardiovascular parameters just before the demise of the animal, resembling that seen in terminal infants.

**1037** FEEDING TECHNIQUES AND NEONATAL NECROTIZING ENTEROCOLITIS. David H. Wells (Spon. by Louis Gluck), Naval Regional Medical Center, Department of Pediatrics, San Diego, Ca. 92134.

The importance of various feeding techniques in the development of neonatal necrotizing enterocolitis (NNEC) was evaluated in a retrospective analysis of eleven infants with NNEC and eleven control infants. The eleven cases of NNEC occurred over a 14-month period. Control infants were chosen on the basis of gestational age, birth weight, and one and five minute Apgar scores. The severity of respiratory distress syndrome, the incidence of umbilical artery catheterization, the occurrence of a patent ductus arteriosus, the incidence of hypotension, and the occurrence of acidosis or hypoxia was similar in the two groups. Feeding techniques were examined in the two groups. There was no statistical difference between the two groups in the time of the first feeding ( $3.3 \pm 3.3$  days for NNEC group versus  $3.8 \pm 3.2$  days for controls), the type of nutrition given (formula or frozen breast milk), how they were fed (transpyloric or gavage), or the amount being fed at the time of diagnosis of NNEC. This data suggests there was no relationship between the feeding techniques used and the development of NNEC. Frozen breast milk was fed exclusively to four infants who developed NNEC and two controls. There was no evidence that frozen breast milk protected an infant from NNEC.

**1038** A NEW FIBER OPTIC UMBILICAL ARTERIAL CATHETER FOR CONTINUOUS OXYHEMOGLOBIN SATURATION MEASUREMENT. Andrew R. Wilkinson, George A. Gregory, Roderic H. Phibbs. Cardiovascular Research Inst. and Depts. of Pediatrics and Anesthesia, University of California, San Francisco.

A new dual lumen polyurethane umbilical arterial catheter containing fiber optics was placed in 29 sick infants. One lumen is used to measure pressure and sample blood, the other lumen contains fiber optics which transmit 3 wavelengths of red light. The light reflected from the blood is measured and converted to a digital and analogue display of oxyhemoglobin saturation ( $\text{SaO}_2$ ). The instrument is calibrated before insertion and has a time constant of 5 secs. Regression analysis of 129 paired values using a cuvette oximeter (L.L.182) shows great accuracy ( $r=0.977$ , S.D.  $\pm 2.46$ ). Oxygen concentration or transpulmonary distending pressure were adjusted to maintain  $\text{SaO}_2$  between 87 and 95% in infants with HbF and 85 to 93% in infants with transfused HbA blood.  $\text{PaO}_2$  measured 1503 times was between 45-85 torr at these values. Abnormal serum electrolytes and indirect bilirubin up to 18 mg/dl did not affect accuracy. In 22 prematurely delivered infants measurements began 3-26 min after birth (mean 8.5 min).  $\text{SaO}_2$  was as low as 10% in severely asphyxiated infants. The effect of a change in assisted ventilation was immediately indicated on the digital display. Complications such as pneumothorax, pulmonary hemorrhage, pulmonary edema, patent ductus arteriosus and alveolar capillary air embolism were diagnosed and treated with the help of continuous monitoring. In one infant during apnea,  $\text{SaO}_2$  fell below 85%, triggering an alarm before the conventional respiratory alarm responded.