**1248** NEURODEVELOPMENTAL(ND) AND CARDIORESPIRATORY(CR) FOLLOWUP OF INFANTS WITH PERSISTENT PULMONARY HYPERTENSION OF THE NEWBORN(PPHN). Judy Bernbaum, Pam Russell Michael Gewitz, William Fox, George J. Peckham. Dept. of Peds., Univ. of Pa. Sch. of Med.,Children's Hosp. of Phila., Phila., PA.

PPHN is a syndrome associated with high morbidity and mortality. Therapy often aims at maintaining $pCO_2$ <30mmHg and pH >7.5 until pulmonary hypertension resolves. To assess whether the disease or its therapy adversely affects ND or CR outcome,12 infants were evaluated with long-term followup. All were male with mean ($\bar{M}$) birth wt.=3.23kg(range2.4-4.2), $\bar{M}$ gest. age=38wks(35-40), $\bar{M}$ Apgars 6.6(1-9)1min/8(4-9)5min and $\bar{M}$ initial $pO_2$=37mmHg(17-63). During therapy, $pCO_2$ was <30mmHg for a $\bar{M}$ of 15 hrs(1-24) and pH >7.5 for a $\bar{M}$ of 62 hrs(36-96). $\bar{M}$ duration of ventilation was 9.5 days(½-36) with peak inflating press.(PIP)>30cmH2O for a $\bar{M}$ of 102 hrs(12-228). $\bar{M}$ age of followup evaluation was 29 mo(6-48). 9/12 are entirely normal neurologically. 2/12 have slightly increased lower extremity tone and 1 has mod. unilateral hypertonia. 11/12 children are normal or mildly delayed. 9/11 have developmental quotients(DQ) or IQ=87-105. 2/11 have mildly delayed DQ's(70-80). Only 1 is mod-sev delayed(DQ=50); however, he has a strong family history of retardation. All cardiac exams, electrocardiograms,& echocardiograms are normal. 4/12 have chronic lung disease (CLD) requiring bronchodilators. The presence of CLD is apparent only in those exposed to prolonged high PIP ($\bar{M}$ cmH2O=50 for $\bar{M}$=34 hrs). The exact etiology of the CLD in these patients, however, is not clear. Conclusion:Survivors of PPHN have a low incidence of severe ND or CR problems resulting from either the disease or its therapy.

**1249** NEUROTRANSMITTER STUDIES (BIOGENIC AMINE METABOLITES) IN IDIOPATHIC APNEA OF PREMATURITY. EFFECT OF AMINOPHYLLINE ON THESE TRANSMITTERS. Abdul M. Bhat, Farouk Karoum, Bennett Lavenstein, John W. Scanlon, Georgetown University Hospital, Department of Pediatrics and National Institute of Mental Health, Department of Clinical Psychopharmacology, Washington, D.C.

Acid metabolites of biogenic amines (Homovanillic acid (HVA) and 3-methoxy-4-hydroxyphenylethylene-glycol (MHPA) were studied in cerebrospinal fluid of 34 newborn infants. This was done to study the competency of biogenic amine pathways in the central nervous system of preterm infants with or without idiopathic apnea. These infants were divided into the following groups: Term, preterm, preterm with apnea, preterm with apnea treated with aminophylline and preterm infants at conceptual age of 40 weeks, free of apnea and not on aminophylline. HVA levels in preterm and term infants were 76.5 ± 39.2 and 118 ± 60.1 (Mean ± SD) ng/ml. MHPA levels between these two groups were 26.5 ± 5.4 and 21.9 ± 6.6 (Mean ± SD) ng/ml (P = NS). Apneic infants had significantly higher levels of MHPA than non apneic infants (36.6 ± 7.5 VS 26.5 ± 5.4 Mean ± SD ng/ml) P =0.001. Aminophylline therapy did not increase levels of these metabolites in cerebrospinal fluid. There was progressive rise in MPHA levels in CSF of preterm infants with increasing postnatal age. We conclude that idiopathic apnea of prematurity is not related to depletion of catacholamine stores in the central nervous system. Aminophylline does not relieve apnea by stimulation of the adrenergic system.

**1250** VARIATION IN CREATININE EXCRETION DURING 24 HOUR PERIODS IN PRETERM INFANTS, Abdul M. Bhat, John W. Scanlon, Georgetown University, Department of Pediatrics, and Columbia Hospital for Women, Washington, D.C.

Two consecutive 12 hour period's creatinine excretion was longitudinally studied in 30 premature appropriate-for-gestational age infants, who were of 26 to 34 weeks gestation. This study was undertaken to determine whether there was variation in creatinine excretion (expressed as mg/kg/hour) for infants between 26-30 weeks which is different than for infants between 30-34 weeks. Creatinine excretion was significantly lower ($p<.05$) in the more immature group. This difference was only apparent at 1-3 days postnatal age and disappeared by 10-15 days postnatal age. We also demonstrated considerable variation in creatinine excretion between two consecutive 12 hour periods.

We suggest that creatinine clearance determinations based on short time period urine collections and creatinine excretion may not accurately represent 24 hour creatinine clearance in prematures.

**1251** THE RELATIONSHIP OF EOSINOPHILS TO IN VIVO GRANULOPOIESIS IN PRETERM INFANTS, Abdul M. Bhat. John W. Scanlon, Georgetown University ,Department of Pediatrics and Columbia Hospital, Washington, D. C.

The possible role of the eosinophil in modulating granulopoiesis is not well understood. The eosinophil has been shown to inhibit granulopoiesis in vitro, possibly mediated through prostaglandin E. This prospective study was undertaken to define the association between eosinophilia and neutropenia in preterm infants.

Eosinophilia is a common finding in preterm infants. By doing simultaneous absolute neutrophil and absolute eosinophil counts on preterm infants with eosinophilia on 27 different occasions, we demonstrated no correlation between circulating eosinophil and neutrophil counts in these preterm infants.

We suggest that, in vivo, the presence of eosinophilia does not inhibit granulopoiesis in human premature infants. This is contrary to recent published retrospective data.

**1252** TISSUE pH, (TpH), CARDIAC OUTPUT (CO)BLOOD LACTATE(BL) CHANGES FOLLOWING ACUTE HYPOVOLEMIA IN PUPPIES. Rama Bhat, Bert Braverman, Parvin Justice, Morton Schuman, Dharmapuri Vidyasagar. University of Illinois, Dept. of Pediatrics, Chicago, Illinois

CO, tpH, and BL changes were studied in 8 puppies during acute hypovolemia and reinfusion. Hypovolemia was induced by bleeding 20 ml/kg of blood. Mean blood pressure (MBP),heart rate (HR) and tpH were monitored continuously. CO, BL and arterial blood gases were analyzed every 15' during the study. After 30' hypovolemia blood was reinfused and all the above parameters were monitored for the next 30' cO, and tpH decreased significantly during hypovolemia. Changes in MBP were transient and minimal. The fall in

| | tpH | ApH | CO (L/mt) | BL (m.mol/L) | MBP (mm.Hg) |
|---|---|---|---|---|---|
| Steady State | 7.36±0.01 | 7.38±0.02 | 0.84±0.09 | 0.80±0.13 | 89±3.0 |
| 15' hypovolemia | 7.20±0.02 | 7.24±0.02 | 0.53±0.04 | 3.92±0.52 | 75±3.0 |
| 30' hypovolemia | 7.15±0.02 | 7.21±0.02 | 0.50±0.04 | 4.40±0.65 | 77±5.0 |
| Recovery 15' | 7.21±0.03 | 7.26±0.02 | 0.89±0.11 | 3.00±0.72 | 87±4.0 |
| Recovery 30' | 7.25±0.03 | 7.29±0.02 | 0.83±0.08 | 2.20±0.47 | 86±4.0 |

tpH was greater than ApH ($p<.05$) and its recovery slower than ApH. BL correlated better with tpH ($r=-0.58$, $p<.005$). Following reinfusion CO, HR, ApH returned to baseline but tpH lagged behind. Summary: 1) In acute hypovolemia tpH was a better indicator of CO and peripheral metabolism than MBP. 2) Slow recovery of tpH following reinfusion could be due to slow clearance of tissue lactate. These data indicate that tpH will be useful in detecting and treating impending or existing shock. (Data in M±S.E)

**1253** PHOTOTHERAPY AND RIBOFLAVIN STATUS. Ellen M. Bifano, David A. Clark, Denise Dixon, Daphne Roe (Spon. by Roger E. Spitzer). SUNY, Ups. Med. Ctr., Dept. of Ped. Syr., NY. & Cornell Univ. Div. of Nutritional Sci., Ithaca, NY.

Erythrocyte glutathione reductase(EGR)activity has been used to detect riboflavin($B_2$) deficiency in premature infants under phototherapy(PHOTO). We investigated variables that might influence PHOTO induced $B_2$ deficiency. 27 infants($\bar{BW}$ 1.55 kg and GA 32.5 wks) were studied from 1 to 7 days of age. 14 infants received PHOTO and 13 served as controls. In the PHOTO group, mean age of onset of PHOTO was 38.5±13.5 hours (range 15-52 hrs) and the mean duration of PHOTO was 39.7±23 hrs (range 17-95 hrs). The mean daily irradiance administered via continuous blue or white PHOTO was 7.8±5.9 nm/cm$^2$ (range 2.8-17 nm/cm$^2$) in the blue spectral range. The PHOTO group had a mean pre-treatment bilirubin of 7.7±1.3 mg/dl and post-treatment bilirubin of 7.6±1.9 mg/dl. Food samples were analyzed for $B_2$ content and the calculated $B_2$ intake for the PHOTO group was 0.09±.09 mg/day and for the control group was 0.14±.12 mg/day. EGR activity as expressed by the activity coefficient(AC) was measured daily. There were no significant differences in the ACs of the control or PHOTO groups. No infants of either group had evidence of $B_2$ deficiency, i.e., AC>1.20. Although our mean duration of PHOTO was less than in previous reports of PHOTO-induced $B_2$ deficiency, 5 of our infants who had normal ACs received >40 hrs of PHOTO with moderate to high irradience and had $B_2$ intakes of ≤0.1 mg/day. $B_2$ deficiency in the premature under PHOTO does not necessarily occur and is not strictly a function of duration of PHOTO or $B_2$ intake.