

†1543 A NEW LOOK AT VISUAL ACUITY IN PREMATURE INFANTS. AM Norcia*, CW Tyler*, RE Piecuch*, RI Clyman. Smith-Kettlewell Institute of Visual Sciences, San Francisco, CA and Dept. of Pediatrics, Mt. Zion Medical Center, San Francisco, CA.

Visual acuity increases during the first year of life. It has been suggested that visual acuity increases in premature infants along the same post conceptual time scale (corrected age) as it does in full term infants. However, these findings have been obtained using methods that rely on observations of infant behavior. As a result, delayed visual acuity in preterm infants may reflect immaturity in motor and postural behaviors rather than in the visual pathway itself. We used a rapid computerized Visual Evoked Potentials (VEP's) system to assess the functional integrity of the visual cortex in term and preterm infants during the first year of life. We recorded VEP's to a graded series of bar patterns which allowed acuity measurements to be made in 10 sec presentations. Contrary to prior behavior studies, we found that visual cortex development in premature infants (born at 28 to 36 wk gestation) was significantly advanced compared with full term infants. Visual acuity (measured by VEP) in premature infants was significantly greater than the visual acuity measured in full term infants when compared on the basis of their post conceptual (corrected) age. Postnatal factors may play a significant role in the accelerated development of the visual cortex in premature infants.

1544 SEPSIS IS A MAJOR FACTOR IN LATE MORTALITY OF VERY, VERY LOW BIRTHWEIGHT INFANTS. Andrew Unger and Boyd W. Goetzman, Department of Pediatrics, School of Medicine, University of California, Davis, Davis, CA

Significant mortality occurs in very, very low birthweight (VVLBW) infants, birthweights <1000 gm, who survive beyond the first week of life. From January 1981 to July 1984, we cared for 157 VVLBW infants. Of the 98 who survived beyond one week of life, twenty-two subsequently died. Thirty episodes of bacteremic sepsis were documented in 23 of the 98 infants. Eight of the 23 (35%) infected infants died and they accounted for 36% of the late mortality in this group. Gram positive organisms of low pathogenicity were most often involved; S. Epidermidis was isolated during 14 of the septicemic episodes. Birthweight and gestational age did not statistically differ between the groups with and without infection (B.W. 802 ±147 gm vs 797 ±124gm, G.A. 27.9 ±2.0 wks vs 28.3 ±2.1 wks). While the infants cared for during 1983-84 were smaller than the ones cared for in 1981-82 (7 of 11 infected infants weighing less than 750 gms as compared to 1 of 12 during 1981-82) overall sepsis incidence did not increase. The use of parenteral nutrition (PN) was significantly associated with infection (p <0.01). The incidence of chronic lung disease in all infants was high, 64%, but group differences were not statistically different. Our observations confirm the importance of nosocomial infection in late mortality of VVLBW infants and extend the observations of Munson et al to this weight class. However, for this group of infants with BW less than 1000 grams, unexpectedly we found no increased risk of sepsis with either decreasing BW or EGA.

1545 NEONATAL VARIABLES AND OUTCOME IN A NEONATAL ICU POPULATION. Jose G. Urrutia (Spon. by M. G. Robinson), Medical College of Ohio, The Toledo Hospital, Dept. of Ped., Toledo, Ohio.

376 VLBW neonates were admitted to Regional Perinatal Center between July 1979 to December 1981. 281 (75%) survived, 127 (45%) were followed up for up to 18 months corrected age and 3 years of age. The overall neonatal mortality was 25%; mean gestational age, 29.8 ± 2.35 wk.; mean birthweight, 1113 ± 230 gm.; SGA, 26%; Apgar ≤ 3 at 1 min., 35%; ≤ 5 at 5 min., 21%; outborn 35%, ventilated 78%. CT scan/ultrasound was done on 77 (61%), of which 38 (49%) had paraventricular-intraventricular hemorrhage. Neurologic examination, Bayley Scales of Infant Development, McCarthy Scales of Children's Abilities were done. Cerebral palsy or developmental delay (MDI more than 2 standard deviation below the mean), and visual deficits were considered severe handicaps. Mean Bayley Score 70-84 were considered suspect. We compared 14 neonatal variables among the normal (n=76) and the severely handicapped group (n=18). Statistical analysis was done using student t-test. Presence of seizures, exchange transfusion(s), hydrocephalus and ventriculoperitoneal shunt were highly correlated with an abnormal outcome (p <0.01) and multiple birth, breech presentation, and exceeded Kernlute were correlated, but to a lesser degree (p <0.05). Avoiding major CNS hemorrhage may be possible to decrease the incidence of handicaps.

1546 LACK OF CORRELATION BETWEEN EXCEEDED KERNLUTE AND PRESENCE OF HANDICAP IN LONG TERM FOLLOW-UP. Jose G. Urrutia, Susan McQuiston. (Spon. by M. G. Robinson), Medical College of Ohio, The Toledo Hospital, Dept. of Ped., Toledo, Ohio.

To the best of our knowledge, information regarding Kernlute test and long term follow-up in ≤ 1500 gm. very low birthweight (VLBW) neonates is not available. Previous work as well as ours have demonstrated the decreased incidence of handicap in Papile grades I and II paraventricular-intraventricular hemorrhage (PVH), which is comparable to the population with no hemorrhage in VLBW neonates (Ped Res 18:352, 1984). In order to determine the independent relationship of exceeded Kernlute test and presence of handicap (cerebral palsy and/or developmental delay ≤ 1 S.D. below the normal on Bayley Scales of Infant Development at 18 mo. of age), we compared 30 VLBW neonates who during the period July 1979 to December 1981 had an ultrasound/CT brain scan which demonstrated either no hemorrhage (n=21) or grade I and II PVH (n=9) and also had a Kernlute test done. When a Kernlute was reported exceeded, the patient had an exchange transfusion within a few hours. This population was a part of a prospective long term follow-up program from our Regional Perinatal Center. Fisher exact probability test was done.

KERNLUTE	HANDICAP	NO HANDICAP
Exceeded	6	8
Not Exceeded	3	13

p = 0.12 = NS

In this limited population we found no statistically significant difference between the exceeded Kernlute test and evidence of handicap in the absence of a major hemorrhage.

1547 NEWER DIAGNOSTIC MODALITIES AND THERAPY FOR NEONATAL AORTIC THROMBOSIS. George Vailas, J. Paul Scott, Robert T. Brouillette, Arnold Shkolnik, James Conway, and Karen Wiringa. Northwestern University, Children's Memorial Hospital and Prentice Women's Hospital, Departments of Pediatrics and Radiology, Chicago, IL.

Although aortic thrombosis is a recognized complication of umbilical artery catheterization, there is limited experience with newer imaging modalities and therapy. Between 1981 and 1984, 16 neonates developed aortic thrombosis by ultrasonographic (15/16) and/or aortographic (2/16) criteria. Of the 16, 10 were full term, 11 were severely asphyxiated and 8 had persistent pulmonary hypertension. The duration of UAC was 9.5 ± 5.3 (SD) days. The clinical presentation varied from hypertension to multiorgan failure. Ultrasound examination of the aorta was helpful in estimating the size and location of the thrombus and in assessing response to therapy. Radionuclide renography demonstrated abnormal renal function in 9 of 9 studies; on follow-up the renal lesions were persistent (4/4). Five mildly symptomatic patients improved without specific therapy. Of six moderately symptomatic thrombi, 3 improved with heparin, 1 was removed surgically and 2 resolved in 6-7 days with streptokinase. All 5 babies with large aortic thrombi and multiorgan failure died despite therapy including heparin, urokinase, streptokinase and surgery. We conclude that diagnosis by ultrasound and radionuclide renography are important for prompt institution of therapy. In carefully selected cases fibrinolytic therapy may result in rapid complete thrombus resolution.

●1548 GROWTH, MACRONUTRIENT OXIDATION & ACCRETION IN VERY LOW-BIRTHWEIGHT (VLBW) INFANTS WITH VARIABLE ENERGY INTAKE AND CONSTANT DIET COMPOSITION. J. Van Aerde P. Sauer, T. Heim, J. Smith, P. Swyer, Depts. Paed. & Med. Eng; Univ. Toronto, Res. Inst; Hospital Sick Children, Toronto, Canada.

We compared the influence of high (Group I; 154.2±2.6 Kcal/kg.d) and moderate (Group II; 118.9±1.5 Kcal/kg.d) caloric intake on growth, oxidation (ox) and accretion (accr.) of energy, fat, protein and carbohydrate in 27 VLBW formula fed growing infants. 19 studies were performed in Gr I, & 24 in Gr II, combining macronutrient balance, anthropometry & open circuit indirect calorimetry.

(\bar{x} ±S.E.)	Energy (Kcal/kg.d)		Protein (g/kg.d)		Fat (g/kg.d)	
RESULTS:	Group I	Group II	Group I	Group II	Group I	Group II
Intake	154±2.6*	119±1.5	3.31±0.1*	2.54±0.03	7.8±0.2*	6.1±0.1
Losses	19.2±1.6†	13.5±1.3	0.52±0.05*	0.35±0.04	1.59±0.15*	1.11±0.1
Ox.	63.7±0.7*	55.5±1.1	0.75±0.04*	0.47±0.04	0.81±0.14*	1.4±0.2
Accr.	71.5±2.7*	49.9±1.5	2.04±0.07*	1.82±0.06	5.4±0.2*	3.6±0.2
	* p<0.001		† p<0.01		• p<0.02	

Oxygen consumption ($\dot{V}O_2$) and weight gain (wtg) were significantly higher in group I ($\dot{V}O_2$ 8.29±0.09 vs 7.50±0.15 ml/kg.min; wtg 17.8±0.94 vs 15.2±0.82 g/kg.d). Respiratory quotient (RQ) did not differ in the 2 groups (0.95±0.01 vs 0.93±0.01). CONCLUSIONS: (1) Increased energy expenditure at high caloric intake indicates more substrate oxidation and/or conversion into new tissue-disposable material. (2) A similar RQ points out that a high metabolizable energy intake does not influence the proportion of macronutrients oxidised. (3) The differences in protein and fat accretion imply that body composition can be manipulated by changing the energy level without altering the diet composition.