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LONG-TERM EVALUATION OF CHLORAMBUCIL, INCLUDING EFFECTS OF DOSE, IN FREQUENTLY RELAPSING NEPHROTIC SYNDROME. Williams, Susan A., Makker, Sudesh P., Ingelfinger, Julie R. and Grupe, Warren E., Depts of Peds, Children's Hospital Medical Center, Boston, and Case Western Reserve University, Cleveland.

The course of 50 patients (34 male, 16 female) who received 56 courses of chlorambucil together with prednisone (1.5-2mg/kg/d) for steroid responsive but frequently relapsing or steroid dependent nephrotic syndrome has been evaluated over a period of 0.3-15 yrs (mean 3.2 yrs). All but 2 (both < 4 yrs old at time of therapy) had remissions lasting longer than that induced by steroids alone. Only 8 patients experienced a relapse 0.3-5 yrs after this therapy, 6 of whom had disease < 3 yrs at the time of treatment. Of 6 who received second courses of chlorambucil, 5 responded with remissions currently lasting 0.3->5 yrs; one failed to respond to both high dose courses. Life table analysis shows the chlorambucil response to be more permanent than that reported with cyclophosphamide. Actuarial analysis of two dose schedules of chlorambucil (< 0.3mg/kg/d or < 14mg/kg total dose vs. > 0.3 mg/kg/d or > 14mg/kg total dose) shows low dose treatment to be as effective as higher doses; at 5 yrs, 85% of low dose and 77% of high dose patients were still in remission. Immediate side effects were not dose related and included herpes zoster (3), seizures (2), and gastric symptoms (2). The results suggest: 1) continual use of high dose chlorambucil is unwarranted; 2) in terms of immediate response, immediate toxicity and long-term effect, chlorambucil has advantages over cyclophosphamide.

NEUROLOGY

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AUDITORY THRESHOLD IN PRETERM INFANTS. R.N. Amlie, A. Starr, S. Sanders, W.H. Martin. (Spon. by Thos. L. Nelson.) University of California, Irvine, Department of Peds., Irvine, CA.

Auditory evoked brainstem and slow cortical potentials(AEBP) (SCP) were studied in 4 preterm infants with gestational ages(GA) less than 28 weeks. Weights ranged from 560-850 gms. AEBP were measured as responses to auditory clicks at sound intensities of 25,45 & 65 dBSL. 75 dBSL clicks were used in two infants. 10 clicks per sec were presented monaurally and responses to 2048 clicks were amplified and computer averaged. 256 clicks at a rate of 1/sec at 65 dBSL were averaged for the SCP. No AEBP were obtained in 3 infants at 25 and 26 weeks GA at 25, 45 & 65 dBSL. One infant at 26 weeks had only 2 identifiable waves, I & IV-V. An increase to 75 dBSL resulted in the appearance of BP in 2 infants. 65 dBSL clicks however resulted in SCP with a negative-going deflection between 100 and 200 msec. 2 of the infants developed clearly defined waves 2-3 weeks later at 65 dBSL. The basis for this threshold difference is unclear, but may be due to technical factors favoring the larger amplitudes in CP (1-10uV) over BP (<0.5uV), different requirements for neural synchrony of CP & BP or a change in cochlear responsiveness during maturation. We have shown auditory function as measured by AEBP and SCP to be present as early as 25 weeks GA and that SCP are elicited at lower intensities than required for AEBP.

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BRAINSTEM DEVELOPMENT IN NEWBORN TWINS AND SINGLETONS. R.N. Amlie, A. Starr, S. Sanders, W.H. Martin, R.F. Huxtable. (Spon. by Thos. L. Nelson.) University of California, Irvine, Department of Pediatrics, Irvine, CA.

We have evaluated auditory evoked brainstem potentials(AEBP) in 23 twin pairs(T) and 27 singletons(S). AEBP are far field reflections of changes in electrical activity in the auditory brainstem pathway. Clicks were presented monaurally at 10/sec of 65 dBSL and responses recorded from scalp electrodes. 2048 click responses were amplified and computer averaged. Latencies of 3 major consistent waves in the first 10 msec were measured. Conceptual age (CA) range was 31-41 weeks. Birth weight range in T was 965-3650 gms. Mean birth weight difference between twins was 270 gms (20-1130). The table shows mean latency in msec as a function of CA for Waves I, III, IV-V for T & S. The difference in latency(ΔL) of the waves for each T ranged from 0-1.3 msec with a mean of 0.37 msec in 10 T before 36 weeks CA. Range was 0-1 msec with a mean of 0.23 msec for T 36-41 weeks CA. Results may indicate an increase in neural synchrony with age or differences in brainstem maturation in T before 36 weeks CA. The good correlations of AEBP in T & S suggest that the relative placental insufficiency during 3rd

CA (wks)	Wave I (ΔL)	Wave III (ΔL)	Wave IV-V (ΔL)
32-33	2.9(.4)2.9	6.5(.1)6.1	8.8(0)8.4
34-35	2.2(.28)2.1	5.1(.4)5.0	7.6(.49)7.6
36-37	2.0(.32)1.9	4.9(.2)4.8	7.2(0)7
38-39	1.9(.18)1.9	4.7(.38)4.9	7.1(.28)7
40-41	1.7(.15)1.8	4.7(.3)4.6	6.7(.2)6.9

trimester in T is not reflected in brainstem maturation as measured by auditory testing.

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FONTOGRAM - NON-INVASIVE INTRACRANIAL PRESSURE MONITORING. Henrietta S. Bada, James H. Salmon, Waleed M. Hajjar, (Spon. by Joseph M. Garfunkel), Southern Illinois University School of Medicine, Department of Pediatrics, Springfield, Illinois.

The accuracy and usefulness of the aplanation transducer for measuring intracranial pressure over the infant's intact fontanel (FONTOGRAM) were evaluated. Normal Fontogram values (mm Hg) in newborn and premature infants were also determined. The aplanation transducer was secured in place over the anterior fontanel by Surgiflex gauze, with the infant in supine, brow-up position. The transducer's output was shown in a 2-channel recorder standardized such that 1 mm = 1 mm Hg pressure. In infants needing ventricular punctures for diagnostic and/or therapeutic reasons, simultaneous intracranial pressure determination was obtained using standard transducer with the needle into the ventricles. Eighteen paired determinations were done in 7 patients. Pearson Correlation coefficient was 0.99, p value <0.001. In clinically normal infants, intracranial pressures determined by Fontogram alone were in the range of 1-8 mm Hg. The Fontogram shows promise for detecting increased intracranial pressure in infants before it is clinically apparent and for monitoring the effect of treatment.

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ALTERATIONS IN EVOKED RESPONSES IN CHILDREN WITH LEARNING DISABILITY: A DOUBLE BLIND STUDY. Henry W. Baird, William J. Mark, Douglas M. Spencer, Ira M. Steigal. Dept. of Ped., Temple Univ. Sch. of Med., St. Christopher's Hosp. for Children, Phila., Pa.

The following criteria were used to select 29 subjects of school age for this pilot study: (1) normal EEG; (2) no history of a convulsive disorder; diagnosis of CNS disease; or lateralizing signs; (3) normal intelligence; (4) learning disability severe enough to require admission to a special school or class for remedial work; and (5) sufficient psychologic testing to permit a judgment whether the learning disability was clearly due to "perceptual-motor deficits" (group A) or to "emotional factors" (group B). Sixteen of the 29 subjects have been tested for evoked auditory and visual potentials. Using the physiologic determinates developed by E. Roy John, an independent investigator, who did not know either the children or their clinical records, divided the children into 2 groups. The separation of the 16 individuals by the characteristics of evoked potentials corresponded to the group A and group B classification with only one exception.

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LESS THAN 1000 GM INFANT, IMMEDIATE AND LONGTERM OUTCOME: R. Bhat, (by invitation) T.N.K. Raju, and D. Vidyasagar ALSM, Univ. of Ill., Chicago, Illinois

Because of high incidence of neurologic deficits in surviving tiny premature (TP) infants, aggressive attempts to save them is questioned. Results of 100 TP treated with uniformly aggressive management in our NICU is presented here. 82 of these required assisted ventilation from less than <1 day to 68 days. 31/100 infants survived neonatal period. Survival rate for infants between 750-1000 gm was 50% (28/55). 8 of the survivors died between 1 and 3 months of age. Analysis of clinical and biochemical data, and immediate outcome showed that the following factors were associated with mortality.

Apgar 5	Temp. < 96°F	pH < 7.25	Hct < 40%	Hyper glyco (>150mg)	Hypnatremia >150 mEq	ICH
Lived 14%	20%	13%	10%	39%	22%	6%
Died 86%	80%	87%	90%	61%	78%	94%

Other morbidity factors include HMD 65%, PDA 25%, pneumothorax 11%, pulmonary hemorrhage 11%, BPD 8%.

Surviving infants between 6-30 months of age showed the following: 11 (69%) were normal, 2 (12%) borderline deficit, 3 (18%) moderate to severe deficits. PDI and MDI of normal and borderline deficit infants was >85. Severely handicapped infants scored <85. Of the 3 infants with Stage II retrolental fibroplasia, 2 regressed during the 1st year; one was lost for follow-up. In contrast to previous reports, mortality and incidence of neurologic deficits were remarkably lower in the present group suggesting that the intensive care management of TP infants is rewarding.