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ELECTROENCEPHALOGRAPHIC FINDINGS IN MUSCLE-RELAXED ASPHYXIATED INFANTS. Ronald W. Coen, Charlotte B. McCutchen, David Wermer, Joel Snyder (Spon. by Louis Gluck). U. of Calif., San Diego, Dept. Ped., La Jolla, Calif.

In this study, 12 infants who received Pancuronium bromide for mechanical ventilation were monitored with continuously recorded EEG's. All were delivered at term with five minute Apgar scores of <7. EEG recordings were started <4 hours after birth & continued up to 65 hours. Four infants had clinical seizures before continuous EEG's were started. Electrographic seizures, repetitive EEG discharges with abrupt onset & termination, had a characteristic evolution that lasted at least 20 seconds. The seizure components varied in form, frequency & topography. They were generally rhythmic, frequently displaying increasing amplitude & decreasing frequency during the same episode. Periodic lateralized discharges (PLEDs) were seen also. Because the poor prognosis for asphyxiated infants with clinical seizures is well documented, antiepileptic drugs were administered in an attempt to improve outcomes in those infants with electrographic seizures.

Follow-up on these infants is in progress. Thus far one infant has expired. One without electrographic seizures is normal at 7 months & one with seizures is developmentally delayed & has microcephaly.

In conclusion, continuous EEG monitoring is necessary to detect seizures in the muscle relaxed infant.

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EEG FINDINGS IN PREMATURE INFANTS WITH INTRAVENTRICULAR HEMORRHAGE (IVH) (BY CT SCAN). Ronald W. Coen, Ingmar Wickbom, Franz Staudt, George Siu, Carole Shattuck, Reginald Bickford. (Spon. by Louis Gluck) University of California at San Diego, Depts. of Pediatrics, Neurology & Radiology, La Jolla, California.

Cukier et al (1972) first noted positive central spike waves in the EEG of infants who died with intraventricular hemorrhages. In 1979 Staudt & Engel noted suppression of EEG background activity in infants with IVH diagnosed by CT scan. The present study was undertaken to investigate further the EEG in infants with major & minor IVH diagnosed by CT scan. Ten infants were enrolled prospectively and had both EEG's & CT scans during the first 13 days. The EEG's and CT scans on another 31 infants were reviewed retrospectively.

In the prospective series, 5 infants had normal EEG's; 4 had abnormal CT scans. Three infants had abnormal EEG's; IVH's were present in 2 infants.

In the retrospective series, 23 infants had normal EEG's. Eight in the first week were associated also with major & minor IVH's. The remaining 8 infants had abnormal EEG's, and all but one were associated with abnormal CT scans.

Outcome has been assessed up to 3½ years and is variable. However, 7 of 10 infants with abnormal EEG's have either expired or are developmentally delayed, while 7 of 23 infants with normal EEG's were abnormal later ($p=NS$). In conclusion, abnormal EEG's did not accompany IVH's in the majority of the infants studied.

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CLINICAL PROFILE OF "NEAR MISS" SUDDEN INFANT DEATH SYNDROME (SIDS). Anne C. Cornwell, Richard E. Kravath, Elliot D. Weitzman, (Spon. L. Finberg), Depts. of Peds & Neurol., A. Einstein Coll. Med., Montefiore Hosp. Med. Ctr., N.Y.

"Near miss" SIDS is not clearly defined and its relationship to SIDS remains speculative. A study performed of infants who had sustained a prolonged apneic episode ("near miss"), terminated by parental intervention included the administration of a questionnaire individually to parents of these 30 otherwise normal infants (15 male and 15 female; 25 full-term and 5 prematures). The "near miss" occurred between 2-20 wks ($\bar{x}$ 8.4 wks) postnatally. Gestational ages ranged from 29-41 wks, birth wt. from 1.5-4.1 kg ($\bar{x}$ 3.1 kg), duration of the "near miss" from 8 to 240 secs. ($\bar{x}$ 66 sec.). In 57% of the infants it occurred during sleep, in 37% during the night, in 63% during the daytime, in 33% during the warmer half of the year and in 67% during the colder months. At the time of the "near miss" 60% had a URI, 53% had a previous disturbance of their sleep routines, 43% had decreased appetite and 30% were fussy and irritable. During the episode 70% were cyanotic, 40% pallid, 23% red; 73% were limp, 17% stiff, and 37% had cold extremities. Intervention with mild stimulation was required in 17%, moderate in 16% and 67% required mouth to mouth ventilation or CPR. Infants with a long "near miss" event required more severe intervention and had a higher birth wt. and gestational age. A URI was associated with lower birth wt. and gestational age. None of these babies subsequently died. These findings suggest that "near miss" SIDS has a characteristic clinical profile with a distinct pattern which bears a close similarity to the events associated with SIDS.

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MUSCLE ULTRASTRUCTURE AND HISTOCHEMISTRY IN REYE'S SYNDROME. John H. Di Liberti, Emanuel Hospital and University of Oregon Health Sciences Center, Departments of Pediatrics, Portland, Oregon. (Spon. by Robert C. Neerhout)

Muscle histochemistry and ultrastructure was studied on percutaneous muscle biopsies from 3 patients with Reye's syndrome 3, 11 and 14 years old. Two or 3 sequential samples were obtained from each patient using 4.0 and 5.0 mm Bergstrom needles. No complications were observed in spite of prolonged PT and PTT.

H & E sections were normal but significant lipid accumulation was seen on oil red O stained sections of tissue obtained between the first and tenth days of illness. The lipid was distributed fairly evenly throughout type I muscle fibers. Lipid content decreased slowly and was normal after about 6 weeks. Oxidative enzyme and other histochemical stains (NADH, succinic dehydrogenase, ATPase, acid phosphatase, modified trichrome) were normal.

The major ultrastructural abnormality observed was loss of cristae in most mitochondria along with vacuolization and pleomorphic shapes. Lipid vacuoles were prominent in the cytoplasm. One biopsy revealed numerous electron-dense crystalline arrays of 100-120 Å particles, similar in appearance to virus particles. Ultrastructural changes returned to normal after several weeks. Lipid accumulation and mitochondrial abnormalities in muscle tissue closely parallel those seen in liver tissue. Percutaneous muscle biopsy appears to be a safe and effective technique for the diagnosis of Reye's syndrome.

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PERCUTANEOUS MUSCLE BIOPSY IN PEDIATRIC-AGE PATIENTS. John H. Di Liberti and Anthony N. D'Agostino, Emanuel Hospital and University of Oregon Health Sciences Center, Departments of Pediatrics, Good Samaritan Hospital, Department of Pathology, Portland, Oregon (Spon. by Robert C. Neerhout).

Twenty-five muscle biopsies were obtained from 20 infants and children ranging in age from one week to 14 years by percutaneous technique, using Bergstrom and modified Bergstrom needles ranging from 3.0 to 5.5 mm diameter. The standard Bergstrom needle was altered to reduce the distance from tip to cutting window making it more suitable for small infants. Adequate tissue samples for histochemical and ultrastructural evaluation were obtained in all but one biopsy. The procedure was performed using local anesthetic, was well tolerated and no complications were observed in spite of prolonged PT and PTT on 4 occasions. The only morbidity was moderate discomfort in several patients for about 24 hours. Diagnoses included congenital myopathies (5), dystrophies (2), Reye's syndrome (4), polymyositis (1) and spinal muscular atrophy (1). Tissue for ultrastructural studies was pinned prior to fixation in glutaraldehyde, the remainder was oriented for frozen transverse and longitudinal sections using a dissecting microscope. Unless focal disease is present the quadriceps muscle is the preferred site for biopsy, particularly in infants. The percutaneous muscle biopsy should be considered the procedure of choice in infants and children unless a larger tissue sample is needed for metabolic studies.

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SERIAL LUMBAR PUNCTURE (LP) IN INTRAVENTRICULAR HEMORRHAGE (IVH). Robert G. Dillard and Robert J. Boyle. (Spon. by W. B. Lorentz) Bowman Gray School of Medicine, Department of Pediatrics, Winston-Salem, NC.

Serial LP in IVH may be effective in preventing progressive hydrocephalus. 34 infants with IVH were randomly assigned daily LP's for 20 days (early tap group, N=16) or to an observe group (N=18). There were no significant differences with respect to sex, birthweight (early tap, $\bar{x}$ =1172 g, observe $\bar{x}$ =1257 g), gestational age (early tap, $\bar{x}$ =29.6, observe $\bar{x}$ =30.1), incidence and severity of RDS, and mean age at diagnosis by 1st computerized tomography (CAT) (early tap, $\bar{x}$ =9.9 days, observe, $\bar{x}$ =7.7 days). 9 of 16 and 8 of 18 of the early tap and observe groups respectively had ventricular dilatation at 1st CAT. CAT was done every 10 days until ventricular size was stable on 2 successive scans. 8 of 16 infants in the early tap group had increasing dilatation at 2nd CAT. 5 infants in the observe group had increasing dilatation at 2nd CAT. These babies were further randomized to a late tap group (N=4) to receive 20 daily LP's or to remain in the observe group (N=1). After 20 days of LP's, 11 early tap infants had stable ventricular size; 5 had progressive hydrocephalus. At the same time 12 observe infants had stable ventricular size, 2 had progressive hydrocephalus. All 4 late tap infants had stable ventricular size after 20 LP's. 5 of 16 early tap infants and 1 of 18 of the initial observe infants required shunts ($\chi^2 = 2.28$, $P=NS$). Including the 4 late tap infants with the early tap group, 5 of 20 tapped and 1 of 14 observe infants required shunts ($\chi^2 = 1.22$, $P=NS$). Serial LP's were not effective in preventing progressive hydrocephalus and the need for shunting.