1675 SPINAL FLUID ENZYMES AS PREDICTORS OF NEUROLOGIC DISABILITY FOLLOWING PERINATAL ASPHYXIA. Frederick K. Hall, Donna K. Daily, C. Gay Kurth, Robert T. Hall. University of Missouri at Kansas City School of Medicine, Children's Mercy Hospital, Kansas City, Missouri.

Spinal fluid samples were obtained from 18 asphyxiated term (GA 40 ± 2 wks, BW 3064 ± 583 gms) neonates to determine whether CSF LDH and CPK are useful predictors of neurologic disability following perinatal asphyxia. These values were compared with CSF enzymes from 7 term (GA 40 ± 1 wk, BW 3521 ± 510 gms) non-asphyxiated infants. Asphyxia was present if the 5 min. Apgar score was < 4 or pH < 7.0 or failure to breathe by 10 min. or hypotonia persisting for 2 hrs. Spinal fluid samples were obtained from the asphyxiated infants at 11.8 ± 5.3 hrs. and from control infants at 32.4 ± 29 hrs. Neurodevelopmental follow-up ranges from 3-15 months in the 15 surviving infants. Abnormal outcome includes death (3), some form of cerebral palsy (8), abnormal Gesell screening (7) or abnormal brain stem auditory responses (4). 8 infants are presently normal.

CSF-LDH (Iu/L) Mean ± Sd			CSF-CPK (Iu/ml)		
Normal	Abnormal	Control	Normal	Abnormal	Control
51 ± 26	159 ± 94	53 ± 25	7 ± 4	34 ± 46	4 ± 3

Infants who died or survived with neurologic handicap have significantly higher CSF LDH levels than either normal survivors or control infants ($p < .025$). Similarly infants who died or survived with neurologic handicap have higher CSF CPK levels than normal survivors or controls ($p < .01$).

	Sensitivity	Specificity	Positive Predictive Value
CSF LDH > 80	.89	.88	.89
CSF CPK > 12	.70	.88	.82

●1676 DETERMINATION OF ADULT SENSITIVITY TO NEUROPEPTIDES DURING DEVELOPMENT, Gail E. Handelmann, Lab. of Developmental Neurobiology, National Institute of Child Health and Human Development, Bethesda, MD (spon. by J. Sidbury).

A number of endogenous chemical factors play a role in development of the brain. We have shown that several peptide neurotransmitters influence neural development by permanently regulating the expression of their own receptors. The regulation of the receptors affects the animal's sensitivity to the peptide and its behavior. For example, substance P (SP) is a peptide important in pain pathways. When administered to neonatal rats (1 µg/pup/day) during the first week after birth, SP permanently increased the number of SP receptors in several sensory regions of the brain. The rats as adults showed greater sensitivity to cutaneous stimulation than control rats. Similarly, rats injected as neonates with opiate peptides during the first week after birth (1 µg/pup/day) had more µ opiate receptors in several brain regions than controls. These rats showed greater tolerance of mildly noxious stimulation than controls, indicating that they were more sensitive to their endogenously-released opioid peptides. These experiments indicate that early exposure to neuropeptides has a long-term influence on brain function by regulating expression of peptide receptors, and therefore the brain's ability to respond to neuropeptides.

1677 NEUROTOXIC COMPLICATIONS OF CONTRAST CT IN CHILDREN. Robert H. Haslam, D. Douglas Cochrane, Gary M. Amundson and Robert D. Johns, University of Calgary, Alberta Children's Hospital, Department of Pediatrics, Neurosciences and Radiology, Calgary, Canada.

Computed cranial tomography (CT) has been considered a safe and accurate method for studying intracranial lesions in children. As a diagnostic adjunct, radiographic contrast material is administered intravenously (IV) to enhance and further characterize lesions such as vascular malformations. Traditional ionic contrast agents can penetrate the blood brain barrier (BBB) and exert an adverse effect due to hyperosmolality, lipid solubility and neurotoxic properties when administered intra-arterially. Contrast agents given IV are generally considered non-neurotoxic.

We report 3 children with brain tumors who rapidly deteriorated following CT with infusion. All had evidence of papilledema but were alert and responsive prior to CT. A patient dose of 2-2.5 ml/kg IV Renografin-60 (diatrizoate meglumine 52% and diatrizoate sodium 8%) was used. Within 6 to 8 hours each child showed progressive lethargy, disorientation, bradycardia, hypertension and generalized seizures (2).

Zamani showed that 4ml/kg IV diatrizoate meglumine-60 disrupted the BBBin some normal dogs. Focal seizures have recently been reported in adults with cerebral metastases following contrast CT. It is likely that the neurological deterioration in the reported children resulted from the osmotic effects of contrast material on cerebral tissue. As contrast enhanced CT may produce grave neurological complications in children with brain tumors, the study should be reserved for those where the probability of additional significant diagnostic yield exists.

1678 SEVERE PERINATAL ASPHYXIA: DOES THE INSULT DETERMINE THE PATTERN OF INJURY? J. Hellmann, P. Parkin, W. Halliday (Spon. by P.R. Swyer). Depts. of Peds. and Pathology, The Hospital for Sick Children, Toronto, Canada.

After independent review, clinical and neuropathological correlations were sought in 20 asphyxiated fullterm infants who survived from 5 hr-12 days ($\bar{x}$ 68 hr). Clinical proposed mechanisms of injury included maternal hypertension + IUGR, placental abruption, maternal hypotension, prolonged difficult labor, nuchal cord and acute cord prolapse. The role of postnatal hypotension, hypo- or hyperglycemia and persistent metabolic acidosis was also examined. Neuropathologically significant damage was present in all brains except in the infant surviving only 5 hr. Two general patterns A & B were recognized: A(n=12) showed a rostrocaudal pattern of severity with extensive neuronal necrosis in basal ganglia, thalami and cerebral cortex and selective neuronal loss in specific brainstem nuclei. B(n=7) showed global neuronal necrosis throughout, including spinal cord grey matter in 6/7. Cerebellum in A and B showed either selective or combined loss of granule cells, Purkinje cells, and neurons in deep nuclei. Infants with type B pattern probably reflect a greater degree of insult as they had a shorter duration of survival but no other detectable clinical correlations. However, type A pattern was seen in all 6 infants with asphyxia following APH; 9/12 infants with type A injury had both postnatal hypotension and persistent acidosis. The neuropathology seen following severe asphyxia varies with the degree of insult, pathogenic mechanism, and postnatal cardiorespiratory status.

1679 THE EFFECT OF BILIRUBIN ON THE UPTAKE OF 5-HT AND DOPAMINE IN RAT BRAIN SYNAPTOSOMES. Thor W.J. Hansen, Trine Tydal, Hugo Jorgensen, & Dag Bratlid (Sponsored by William J. Cashore). Pediatr. Res. Inst., Univ. of Oslo, Oslo, Norway and Inst. of Physiol., Univ. of Bergen, Bergen, Norway.

The study was designed to investigate the effects of bilirubin on synaptosomes from rat brain. Ten percent suspensions of synaptosomes derived from hippocampus and striatum from male Sprague-Dawley rats were prepared in 0.25 M sucrose. A Krebs-Ringer buffer, pH 7.3, gassed with 95% O_2, 5% CO_2, was used throughout. 75µl of synaptosome suspension and 625µl of a buffered bilirubin/albumin solution (molar ratio 8:1) were incubated for 5 min. at 37°C, after which 40µl of ^{3}H-dopamine and ^{14}C-5HT were added and incubation continued for another 10 min. The following bilirubin concentrations (µM) were studied: 1 - 10 - 20 - 40 - 80 - 160 - 320 - 640. The reaction was stopped and the synaptosomes harvested by filtering through a glass microfibre filter premoistened with ice cold saline. Activities were counted in Insta-gel II in a Packard Tri-carb 460 CD scintillation counter. A significant difference from control values ($p<0.05$) was found starting at the following bilirubin concentrations: In striatum with 5-HT: 80µM, with dopamine: 20µM; in hippocampus with 5-HT: 20µM, with dopamine: 10µM. The results indicate that bilirubin inhibits uptake of dopamine and 5-HT both in striatal and hippocampal synaptosomes.

1680 CRANIAL COMPUTED TOMOGRAPHY IN AUTISM. Gwendolyn C. Hotson, Salvador Castells, Maria A. Fusi, Jose V. Rodriguez-Rib, and John Tsiouris, Depts. of Radiology, Pediatrics and Child Psychiatry, SUNY, Downstate Med. Ctr., Brooklyn, N.Y.

Computed tomographic (CT) scans of the brain were obtained in 10 autistic children ages 4 through 10, and compared with 10 age-matched normal controls. The diagnosis of autism was made by two independent doctors and The Childhood Autism Rating Scale (CARS) was administered. The scores in the autistic children were between 31-49 (moderately to severity autistic), and IQ's were under 50. All 20 children had normal sized lateral ventricles, but in 4 pairs, the autistic child's ventricles were larger. The third and fourth ventricles were not significantly different, or abnormal in any pair. Cortical sulci were abnormally prominent in one autistic child, and larger than those of the normal control in 2 additional pairs. Unusual asymmetries were seen only in one normal control. These findings suggest an organic basis for at least some cases of infantile autism. It is possible that a group of autistic children have developmental brain abnormalities. To differentiate this group from other types of autism, CT studies will need to be done in autistic children.