1702 BEHAVIORAL FUNCTIONING IN CHILDREN AND ADOLESCENTS WITH TOURETTE SYNDROME
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Tourette Syndrome [TS] is characterized by multiple, involuntary and repetitive motor and vocal tics. In addition, a number of subtle behavioral atypicalities are often mentioned in the clinical literature, but have received scant empirical attention. To investigate a broad range of behavioral symptoms associated with TS, scores on the Achenbach Child Behavior Checklist [CBC] were compared for 21 TS patients, 21 childhood migraine patients, and 21 idiopathic seizure disorder patients, matched for age ($\bar{x}$=12.5 years) and sex (7 girls and 14 boys per group). Chi-square analysis of the CBC items revealed significantly greater frequencies of crying, of fears and phobias, of obsessive thoughts, and worrying among the TS children. Findings demonstrate a more pronounced tendency to demand attention, to feel guilty, to have strange ideas, and to engage in compulsive activities. The TS children are more likely to bite their nails, to pick at body parts, and to store things up for which they have no need. They are also more likely to behave shyly and to be teased by other children. Further analysis of the CBC factors revealed higher factor scores among the TS children on Hyperactivity, Non-communicativeness, and Social-withdrawal, with significantly more scores falling outside the range of normal (T score > 70) among the TS children than among the migraine or seizure disorder children.

●1703 POST ISCHEMIC EARLY PERMEABILITY CHANGES OF THE BLOOD BRAIN BARRIER(BBB)
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Previous studies of cerebral ischemia using Evans blue dye have not demonstrated vascular changes(vasogenic edema)before 24 hours after injury.Polyethylene glycol(PEG)400,a probe capable of measuring progressive permeability changes,was used to evaluate vascular permeability 4 hours after ischemic insults in 3 groups of rabbits with sham,30 or 60 minute occlusions of both carotid and vertebral vessels.Cerebrospinal fluid(CSF)was evaluated for PEG content and brains were analyzed for Evans blue and water content.

	SHAM OP	30 MIN ISCHEMIA	60 MIN ISCHEMIA
PEG mean mol wt in CSF - daltons	254±22 (n=10)	271±26* (n=8)	295±46** (n=10)
PEG conc in CSF mg/ml	0.52±0.42 (n=10)	0.82±0.47** (n=8)	1.7±1.4** (n=9)
% water in brain	78.2±0.8 (n=15)	78.0±0.9 (n=10)	79.6±0.7*** (n=13)
Evans blue staining	NONE	NONE	NONE

*p<0.05; **p<0.01; ***p<0.001

Conclusions:Increased passive permeability(vascular endothelial injury)occurs within 4 hours of an ischemic insult.Increased permeability occurs before edema accumulates which proceeds the entry of Evans blue.Changes in BBB permeability parallel the duration of the ischemic insult and can be measured by a new sensitive probe,PEG 400.

●1704 PROSTAGLANDIN-MEDIATED CONTROL OF NEONATAL CEREBRAL BLOOD FLOW.
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Intraventricular hemorrhage (IVH) represents a major problem of preterm neonates & is believed to be secondary to alterations in cerebral blood flow (CBF). The newborn beagle pup provides an excellent model for the study of this problem as well as for the study of neonatal CBF. We have studied the alterations in CBF in the newborn beagle pup exposed to hemorrhagic hypotension followed by volume re-expansion for IVH & the effects of the PG-system inhibitors, indomethacin (INDO), ethamsylate (ETHAM) & superoxide dismutase (SOD) in this model system. INDO, believed to inhibit the cyclo-oxygenase pathway, prevented IVH (8% incidence), blunted the BP changes found in saline pretreated pups (IVH rate 75%) & prevented the cortical & germinal matrix CBF changes found in that group as well. ETHAM thought to inhibit the PG-specific synthetic enzymes, lowered baseline CBF, but prevented IVH less well than INDO (30%). ETHAM only somewhat blunted CBF changes & did not prevent the BP changes found in this model. SOD, a free-radical scavenger, prevented IVH (10%) but had no effect on CBF or BP. INDO & ETHAM inhibited the synthesis of TXB_2 & 6-keto $PGF1_\alpha$, the breakdown products of TXA_2 & PGI_2 respectively (baseline controls: TXB_2 700 pg/ml, 6-keto $PGF1_\alpha$ 650 pg/ml; after INDO 289, 250 respectively; after ETHAM 132, 247 respectively). SOD had no effect on the synthesis of either PG. We hypothesize that neonatal IVH may be secondary to both alterations in CBF & free radical mediated germinal matrix capillary changes.

1705 INTRAPARTUM FACTORS AND INTRAVENTRICULAR HEMORRHAGE (IVH) IN VERY LOW BIRTH WEIGHT (VLBW) INFANTS.
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In 112 VLBW neonates, intrapartum factors were prospectively evaluated in relation to the development of IVH. Real-time ultrasound was performed at a mean age of 27.3±17.1 hrs. Twenty-seven (24%) had IVH (20 Grade I, 2 Grade II, 2 Grade III, 3 Grade IV). Mean BW for the non-IVH group was 1087±268g vs 1019±279g for those with IVH. Males accounted for 48% of the non-IVH group and 62% of the IVH group(NS). Umbilical cord pH in 5(9%) of the non-IVH group and in 3(14%) of the IVH group was less than 7.20(NS). There was no difference in antepartum/intrapartum maternal or fetal complications. The incidence of abnormal FHR patterns and rate of abnormal presentations and duration of labor were similar in both groups. C-section with/without labor provided no advantage over vaginal delivery. Of 6 vaginal breech deliveries there was 1 infant with IVH(Grade I). Although incidence of RDS and volume expansion were similar, the need of assisted ventilation (AV) was higher in the IVH group(.05). Due to the low rate of major IVH (Grade III and IV, 4.4%) 12 pairs of infants were matched for BW within 100g. The 5 min. Apgar score was lower in infants with major IVH(.05). There was no difference in abnormal FHR patterns, breech presentation, mode of delivery and 1 min. Apgar score. Use of c-section for fetal distress in VLBW infants did not prevent IVH. The degree of neonatal depression in combination with AV rather than intrapartum factors/fetal distress with acidosis may be an important factor in determining the occurrence of major IVH.

1706 AUDITORY BRAINSTEM EVOKED RESPONSES (ABR) IN NEWBORNS WITH NEONATAL NARCOTIC ABSTINENCE SYNDROME (NNAS).
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Newborns with NNAS have evidence of advanced maturation of the lungs and liver as shown by a lower incidence of respiratory distress syndrome and hyperbilirubinemia. It is not known whether the brain-stem maturation of these infants is also accelerated. ABRs have been shown to be useful for evaluating the maturation of the brain-stem and also correlate with gestational age (GA). Therefore, this technique was used to evaluate the maturation of the brain-stem in infants with NNAS.

Thirteen newborns with NNAS (mean BW 3158 gm, GA 35-43 weeks) underwent ABR testing during their hospital stay. Severity of NNAS was quantitated by the score of Finnegan. All three major components (waves I, III, V) of the ABR could be elicited in these infants. The usual changes in ABR associated with advancing GA were present in these newborns. The I-III interval was equal to known standards for GA, whereas the I-V interval (central conduction time) tended to be shorter at all GAs. ABRs were apparently not affected by severity of NNAS or drug therapy.

In summary, ABR can be used to assess brain-stem maturation in newborns with NNAS. Infants with NNAS show a trend towards shorter transmission time in the auditory nerve pathway, possibly due to faster upper brain-stem conduction.

1707 PLASMA AND URINE CARNITINE CONCENTRATIONS IN PATIENTS RECEIVING VALPROIC ACID.
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A rare, fatal, and unexplained Reye's-like syndrome occurs in patients taking valproic acid(VPA). Patients on VPA also experience asymptomatic elevations of serum NH_3. This NH_3 concentration has been inversely correlated with serum carnitine(J Peds 101: 782, 1983).

Total and free carnitine concentrations were measured in plasma and urine from 21 children on VPA, as well as serum NH_3, VPA, SGPT and SGOT. The mean carnitine was 39.8(± 21) uM/l (nl = 50 ± 20), and the mean NH_3, 59 uM/l(nl ≤ 35). The other parameters were not abnormal. Three patients had serum carnitine concentrations ≤ 20 and they were asymptomatic. Serum carnitine did not correlate with the dose of VPA, its serum level, or serum NH_3. Total urinary carnitine was normal, but 84% of it was esterified(nl = 50%).

The absence of a correlation of carnitine and NH_3 contrasts with an earlier report and may be secondary to population differences. The high proportion of esterified carnitine in urine suggests that this is a pathway for VPA excretion. Therapy with VPA may reduce serum carnitine. As a marked reduction of carnitine is one cause of recurrent Reye's syndrome, as interaction between carnitine and VPA may explain the fatal hepatotoxicity of that anticonvulsant.