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PREDICTION OF SEIZURE RECURRENCE AFTER A FEBRILE SEIZURE

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Of all children with febrile seizures (FS) 15 to 80% are reported to have recurrent FS. Children at increased risk of frequent recurrences might be candidates for some form of prophylactic treatment. Accurate assessment of the individual child's recurrence risk is therefore essential. To determine the risk of subsequent seizures after a 1st, 2nd or 3rd episode of FS we used the findings of our large collaborative cohort study (J Pediatr 1994, April issue).

Data on 2496 children with a total number of 3459 episodes at risk for a subsequent FS until the age of 5 years were examined. The overall recurrence rate after a 1st, a 2nd or 3rd FS was 32%, 47% and 49% respectively. A child's attained age was the most important determinant of seizure recurrence. Other significant factors were a first degree family history of febrile or unprovoked seizures and a temperature < 40.0°C at the first FS; the number and recency of previous experienced FS provided additional information. These risk factors were examined multivariately and combined into a prognostic index for each single child. Estimated recurrence risk and observed number of recurrences were compared in various risk strata, the predictive validity of the model was assessed using the individual data on 347 children from a recently published follow up study (N Engl J Med 1992;327:1122-7).

For a child with a first FS recurrence at 18 months and no risk factors, the estimated probability of further seizures up to the age of 5 years is 47%, if a second recurrence occurs at 30 months, this risk becomes 26%. Patients allocated by the prognostic index into the highest of five risk groups had an observed recurrence risk of 89% at 5 years, with a predicted value of 85%. Corresponding results for low risk were 9% (observed) and 7% (predicted), for medium risk 31% and 31%, respectively.

We conclude that this prognostic index identifies children at high and low risk for frequent recurrences and can be a useful tool for clinical practice.

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THE EFFECT OF PHYSIOLOGICAL VARIABLES ON MEAN PEAK CEREBRAL BLOOD FLOW VELOCITY (MV) IN PRETERM VENTILATED NEONATES.

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Objective: To study in ventilated neonates the effect of physiological variables on MV in the internal carotid (ICA), the anterior cerebral (ACA), and the middle cerebral arteries (MCA). **Material/methods:** 65 quiet, stable, ventilated neonates (gestational age 24-32 weeks) with no echocardiographic evidence of a patent ductus arteriosus (PDA) were studied on 106 occasions, using Doppler technique (Pediatr Radiol 1991;21:395). Stepwise regression analysis was used to assess the effect of physiological variables on MV. **Results:** Baseline characteristics: weight (W) 613-1830 g, age 0.29-33 days, haematocrit (Hct) 0.29-0.58, mean arterial blood pressure (MBP) 20-66 mm Hg, ventilation index (VI)(peak inspiratory pressure x ventilatory rate) 60-1560, pH 7.27-7.56, $apCO_2$ 24-65 mmHg, apO_2 31-109 mmHg. Weight, Hct, MBP, and VI were the most important variables in the regression model in all vessels. The regression equation for MV in the right ICA is given as an example: Log(MV)=2.69+0.00046(W)+0.0093(MBP)-1.66(Hct)-0.00039(VI). **Conclusions:** Physiological variables influenced MV in the major intracranial vessels in these stable, ventilated, preterm neonates without a PDA.

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A PROSPECTIVE STUDY COMPARING SYSTEMATIC INTERVIEW & ANALYSIS OF MATERNAL HAIR AND MECONIUM TO DETERMINE ILLICIT DRUG USE DURING PREGNANCY. Enrique Ostrea, Jr., Kirk Knapp, Anthony Ostrea, Libby Tannenbaum, Vali Saleri. Departments of Pediatrics & Obstetrics, Wayne State University, Hutzel Hospital, Detroit, Michigan USA

Accurate information on gestational, illicit drug use is important, yet difficult to obtain. An NIH funding allowed the prospective study of 52 pregnant drug users and 7 controls, throughout gestation, to determine their drug use by bimonthly interview and quantitative maternal hair [taken at enrollment (mean gestation = 18 wks), midgestation and delivery] and meconium (sampled for 3 days) analyses for cocaine (C), opiate (O) and cannabinoid (MJ) by RIA and confirmed by GC/MS. RESULTS: I. Meconium analysis had the highest sensitivity (Sn) and specificity (Sp) for C & O detection (Table). Hair analysis had as high Sn, but lower Sp (13-24% false positive) due to passive exposure. History had a 44% denial rate for C use. Hair and meconium analyses have low Sn (38-60%) for MJ detection.

	Cocaine		Opiate		Cannabinoid	
	Sn	Sp	Sn	Sp	Sn	Sp
History	75%	100%	94%	97%	100%	70%
Mec	97%	100%	100%	97%	60%	91%
Hair	100%	87%	100%	86%	38%	91%

II. For amount of drug used, there was significant ($p<0.001$) correlation between the 3 tests for C use, and between history and hair, for O and MJ use. III. For timing of drug use, women who admitted to using C or O throughout gestation showed positive hair and meconium tests in all serial samples obtained. We conclude that meconium or hair analysis can sensitively detect many aspects of C & O use during gestation; however, meconium analysis is clearly advantageous, because it is noninvasive and highly more specific.

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A MARKER OF FETAL EXPOSURE TO ALCOHOL BY MECONIUM ANALYSIS. Ernest Mac, Maria Pacis, Gerardo Garcia, Enrique Ostrea, Jr. Depts. of Pediatrics, Wayne State University, Hutzel Hospital, Detroit, Michigan USA.

The fetal effects of alcohol are known; yet, no reliable marker of fetal exposure to alcohol has been identified. Fatty acid ethyl esters (FAEE) are enzymatic, non-oxidative products of in vivo ethanol metabolism, have long half life and are markers of ethanol consumption in the adult. We report on the identification of FAEE in meconium of alcohol exposed infants at concentrations proportional to the amount of maternal alcohol use.

Preliminary studies to determine the optimum method for extraction and isolation of FAEE in meconium were done. FAEE standards (ethyl palmitate and stearate) were spiked into meconium and extracted by acetone or hexane:water and isolated by TLC or bonded phase column. Detection was by GC/MS. Optimum FAEE extraction and chromatogram were achieved using the hexane:water/bonded phase column combination. With this method, meconium was analyzed for FAEE in 10 control and 15 alcohol exposed infants. In the latter, FAEE concentrations were multifold higher than control and with a wide range, proportional to the amount of maternal alcohol use (see table).

Mean FAEE (ng/ml)	Ethyl laurate	Ethyl palmitate	Ethyl stearate
Control (range)	32.0 (0-29.6)	67.2 (2-367)	32.3 (0.4-54)
Alcohol exposed (range)	4799 (76-36,106)	1082 (57-8290)	338.2 (28-1908)

We conclude that FAEE in meconium may serve as an important biologic marker of fetal exposure to ethanol and provide an important, objective tool for the precise study of alcohol exposure and its fetal effects.

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INTERLEUKIN-8 (IL-8) LEVELS IN BRONCHOALVEOLAR LAVAGE (BAL) FLUID OF INFANTS WITH RDS

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IL-8 is a novel cytochine produced by a number of cells including monocyte-macrophages,fibroblasts and pulmonary epithelial cells. It has both neutrophil chemotactic and activation properties . In many forms of pulmonary disease such as neonatal RDS, it has been shown a neutrophil influx in the lung. We speculated that one of the signals for the lung neutrophil sequestration could be the release of IL-8. To assess this hypothesis we collected 38 specimens of BAL fluid in 21 neonates (mean GA:30.4wks,range 27-36; mean BW:1501.9g,range 740-2950) consecutively admitted in our NICU with uncomplicated RDS (Gr.1), with RDS evolving BPD (Gr.2) and without RDS (Gr.3).Specimens were obtained serially between the 2nd and 10th day of life. Samples with positive colture were excluded. In the remainig 23 specimens we determined IL-8 levels and the white blood cells differential count was calculated.

	IL-8 (mean +/-SD)	% Neutrophil (mean +/-SD)	p
Gr.1:Uncomplicated RDS(10dtn)	1.34 OD +/-0.57	45 +/-27	0.96
Gr.2:RDS evolving BPD(10dtn)	1.94 OD +/-0.20	88 +/-2	0.82
Gr.3:no RDS(3dtn)	undetectable	8 +/-2	

We found a direct correlation between the neutrophil percentage and the IL-8 level in group 1 and group 2. In addition the differences of IL-8 mean level between group 1 and 2 vs group 3 and group 1 vs group 2 were statistically significant ($p < 0.01$).

Therefore we conclude that the good correlation between neutrophils and IL-8 in BAL fluid of infants with RDS could confirm the importance of IL-8 for the neutrophil sequestration in the lung. Furthemore we believe that the high level of IL-8 in the specimens of infants who later developed BPD could make IL-8 a good marker of BPD.Italian CNR, Targ Proj FATMA n 93 00602

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LOCALISED ^{1}H MAGNETIC RESONANCE SPECTROSCOPY OF THE BRAIN IN NORMAL AND PERINATALLY ASPHYXIATED INFANTS.

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The aims of this study were to define ^{1}H metabolite peak area ratios in normal infants and to investigate abnormalities after perinatal asphyxia. The normal infants (n=14) were studied at a gestational plus postnatal age of 31-41(36) weeks. The asphyxiated infants (n=10) were born at 26-41(37) weeks and studied on a total of 19 occasions aged 0-10(2) days.PRESS spectra were collected at 2.4T (TE 270ms) from 8ml voxels located in the thalamus or occipito-parietal region(O-P). Peak areas for the metabolites N-acetylaspartate (Naa), creatine+phospocreatine (Cr), choline (Cho) and lactate (Lac) were measured and ratios (mean(SD)) in the normal infants were as follows:

	Thalamus (n=14)	O-P (n=8)
Naa/Cho	0.75 (0.26)	0.67 (0.14)
Cr/Cho	0.49 (0.16)	0.45 (0.15)
Lac/Naa	0.23 (0.08)	0.58 (0.30)

Lactate was detected in all 14 infants, and Lac/Naa was higher in the O-P than in the thalamus($p<0.005$; paired t-test). Lac/Naa decreased linearly with gestation in both the thalamus ($p=0.014$,m=-0.02/wk) and O-P ($p=0.033$, m=-0.07/wk). Lac/Naa was above 95% confidence limits for the thalamus and/or O-P in 7 of the 10 asphyxiated infants: of these 7 infants 2 died and 3 were neurologically abnormal aged 2 months. We conclude 1.In normal infants Lac/Naa decreased with increasing gestation 2. Lac/Naa was raised following perinatal hypoxia-ischaemia and may indicate a bad prognosis.