## 51 EARLY SYSTOLIC TIME INTERVALS IN NEONATAL RESPIRATORY DISTRESS

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In this study we prospectively evaluated cardiac performance in 184 neonates admitted consequtively to neonatal intensive care because of early-onset respiratory disorder. We measured right and left ventricular systolic time intervals (RVSTI and LVSTI), blood pressure and heart rate at admission (2.9 + 0.8 h), at 5-7 h and at 24-26 h. Group A (N=161) consisted of term neonates with mild, moderate or severe transient tachypnoea (TTN), or with meconium aspiration (MA). Controls (N=14) were born through spontaneous vaginal delivery without medications. Group B (N=23) consisted of pre-term infants with severe IRDS. Controls (N=10) were pre-term infants without respiratory symptoms and increased $FiO_2$-requirements.

| | | | adm | 5-7 h | 24-26 h |
|---|---|---|---|---|---|
| Group A | Mild TTN | | | | |
| | | RVSTI | ▲0.42±0.04 | ▲0.46±0.03 | 0.34±0.05 |
| | | LVSTI | 0.32±0.06 | 0.38±0.04 | 0.31±0.04 |
| | Severe TTN+MA | | | | |
| | | RVSTI | ▲0.59±0.08 | ▲0.61±0.07 | ▲0.64±0.06 |
| | | LVSTI | 0.36±0.10 | ▲0.52±0.07 | ▲0.58±0.08 |
| Group B | Severe IRDS | | | | |
| | | RVSTI | 0.36±0.05 | 0.37±0.09 | 0.38±0.07 |
| | | LVSTI | ▲0.49±0.07 | ▲0.53±0.09 | ▲0.58±0.10 |

▲= prolonged over that observed in controls

In severe respiratory distress of term neonates, pulmonary hypertension is an early and important factor; later at the age of 6 h and thereafter, signs of impaired left ventricular performance emerge. In pre-term infants, restricted left ventricular performance appear at early stages of respiratory disease, and may be associated with insufficient maintenance of systemic blood pressure.

## 52 Enzyme induction following prenatale exposure to anticonvulsants measured by $^{13}C$-breath tests

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Enzyme activity for demethylation processes can be estimated in vivo non-invasively by $^{13}C$-breath tests (BT). After oral intake of stable isotope labeled $^{13}C$-aminopyrine (AP) (2 mg/kg) resp. $^{13}C$-methacetin (MAC) (1,5 mg/kg) $^{13}CO_2$-concentration in breath samples measured by ratio mass-spectrometry will reflect cytochrom $P_{450}$ dependent AP-N-demethylation resp. $P_{448}$ MAC-O-demethylation. Neonates of epileptic women exposed prenatally to anticonvulsants were studied by $^{13}C$-AP-(n=25) and $^{13}C$-MAC-BT (n=18) while 6 non-exposed newborns served as controls. Half life times of diaplacentally acquired anticonvulsants were determined in 14 resp. 7 of the exposed neonates. The 2h cumulative $^{13}C$-elimination of exposed newborns (7.1 range: 3.4-15.o (%$^{13}C$-dose) ) was significantly ($p < o.oo5$) above those of non-exposed neonates (1.7: 1.o-3.2) in $^{13}C$-AP-BT as well as in $^{13}C$-MAC-BT (18.9: 13.8-25.8 versus 9.7: 5.3-18.o) ($p < o.o5$). In normal neonates AP-N-demethylation amounts to only 15 % of those values found in older children aged 2 y or more, while MAC-O-demethylation at that time is significantly higher (3o % of older controls).However,the intrauterine exposure to anticonvulsants will induce both demethylation processes to the same degree (6o % of older controls). Enzyme induction estimated by $^{13}C$-BT did not correlate in all instances with half life time of anticonvulsants determined in the same individuum,reflecting the multiplicity of enzyme systems and selectivity of the different tests.

## 53 EYE FINDINGS IN THE FETAL ALCOHOL SYNDROME (FAS)

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30 children with FAS were examined regarding eye findings. Typical facial features for FAS were noted, like ptosis, small palpebral fissures and strabismus. The most frequent findings were anomalies of the optic nerves and retinal vessels with more than 50 % of the children being affected . 29 % of the eyes had a visual acuity of 0.2 or less. Another 56 % had moderately reduced vision. A control study consisting of 22 children born by mothers who had not been abusing alcohol during pregnancy did not reveal any abnormalities of the eyes. Alcohol abuse during pregnancy seems to be a major cause of congenital anomalies of the optic nerves and retinal vessels.

## 54 PLASMA VITAMIN A AND ZINC IN CYSTIC FIBROSIS (CF)

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Zinc is required for the synthesis of Vitamin A (Vit.A) carrier proteins - retinol binding protein (RBP) and prealbumin (PA). Low plasma zinc and Vit.A have been observed in CF. We have studied the relationship between plasma levels of Vit.A, RBP and PA with plasma zinc in 37 patients with CF and 25 similar aged controls. There was no statistically significant difference between CF patients and controls for plasma Vit.A and zinc concentrations. In CF patients there was a significant correlation between Vit.A and RBP ($r = 0.69$, $p < 0.001$) and PA ($r = +0.80$, $p < 0.001$). In control subjects there was a significant correlation between Vit.A and RBP ($r = 0.56$, $p < 0.01$) but not with PA ($r = +0.17$, NS). In CF patients RBP and PA were correlated with the following

| | RBP | | PA | |
|---|---|---|---|---|
| | r | p | r | p |
| Shwachmann score | +0.48 | <0.01 | +0.50 | <0.01 |
| Ht. Velocity (kg/yr) | +0.46 | <0.02 | +0.48 | <0.01 |
| Wt. Velocity (cm/yr) | +0.05 | NS | +0.38 | <0.05 |
| Serum zinc | +0.03 | NS | +0.19 | NS |

Thus we were unable to find evidence of low plasma Vit.A or plasma zinc concentrations in a fairly healthy (median Shwachmann score 82) group of patients with CF. There was no correlation between plasma zinc and Vit.A carrier proteins.

## 55 Sudden infant death (SID): Histological study of the external arcuate nucleus (EAN) of the brainstem

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A current hypothesis linking SID to a central nervous system dysfunction due to absence of the EAN prompted the present study.
Histological examinations of the brainstem were carried out on 13 term and 3 preterm infants who had suddenly died at home between the third and 29.week of life.The control group consisted of two term infants,age 5 and 9 months who had died due to self-strangulation, two term newborns,age 3 and 18 days,dying from respiratory distress and peritonitis,respectively and in addition of 8 fetuses at 17 to 33 weeks gestational age.
Each brainstem was sectioned serially from the caudal pons to the end of the medulla at 6 -8 um intervals. Every fourth section was stained with hematoxylin and eosin and in each case 140-160 sections were analyzed. Neurons were counted separately in two areas in which the central chemoreceptors may exist,one located rostrally of the hypoglossus root(field 1),the other medially to the rostral part of the hypoglossus root (field 2).
Results were as follows:1)all SID-infants demonstrated the EAN. 2) number of neurons per area decreased with infants growth; by 20 weeks we found $1.390x10^3/mm^2$, by birth $73x10^3/mm^2$,in SID-infants and in controls 50-30x $10^3/mm^2$. 3) cell distribution was irregular, especially in field 2.
(Supported by SWISS NATIONAL SCIENCE FOUNDATION grant 3.997.82 )

## 56 EFFECT OF BANKED HUMAN BREAST MILK(BHBM)ON THE POST-NATAL EVOLUTION OF MIDARM CIRCUMFERENCE (MAC), TRICIPITAL(T), AND SUBSCAPULAR(S) SKINFOLD (SKF)THICKNESS, ARM MUSCLE(AMA)AND FAT AREAS(AFA)IN APPROPRIATE(AGA)AND SMALL FOR GESTATIONAL AGE(SGA)VERY LOW BIRTH-WEIGHT INFANTS(VLBW). J.L.Excler; L.Sann;Y.Lasne; J.Picard; Hôpital Debrousse, Lyon, France.

We studied 28 newborn infants : 20 AGA(mean±SD)GA:30±1,47weeks(range 28-32) BW: 1301±256g(890-1890) and 8SGA VLBW:GA=34±2,4 (29-37), BW=1137±185g (890-1360). We followed them during 3 to 10 weeks, measuring each week MAC T and SSKF at 60 seconds, AFA and AMA. They were fed BHBM at 40 cc/Kg/d at day 1 to reach 200 cc/Kg/d between day 15 and day 21. NaCl(2mg/Kg/d)was added for 3weeks when BW<1300g.

Compared with the fetus values previously described, at 33,36,and40weeks of fetal age(FA)in AGA,MAC were respectively 7,2±0,7, 7,63±1 and 8±1,41cm, vs(mean)7,8,8,85 and 10,3cm in utero(lower limit of prediction 8,9cm at 40w);in SGA:6,26±0,64, 7,2±0,6, 7,7±0,3cm, vs 6,2, 7,1, and 8,15cm in utero. The same evolution was found with T and SSKF.In AGA,AMA were respectively 333,7±95,5, 351,31 ±80,6, 366,8±118,4, vs 375, 485 and 647,8$mm^2$in utero; in SGA, 263,4±68,7, 339,5±60,2 and 365,8±49, vs 255, 330 and 425$mm^2$in utero.In AGA,AFA were 86,3±19,9, 116±37,9 and 150,5±61,6,vs 105, 145and 200$mm^2$in utero; in SGA, AFA were 51,34±14,6, 75±18,9 and 106,8±7,34, vs 50,75and 105 $mm^2$in utero. After 36weeks of FA,AGA are below the fetus values of AGA for MAC,SKF,AFA and AMA, whereas SGA,VLBW follow the fetus values of SGA. These results suggest that when VLBW are fed exclusively BHBM, 4 weeks after birth, AFA and AMA are below the fetus values in utero.