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INFLUENCE OF DIFFERENT LEVELS OF NEONATAL ASPHYXIA IN BASIC NEONATAL CHEMISTRY IN RATS.
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AIM:We studied the effects of different levels of hypoxia (see table) on basic biochemical markers from newborn rat brain to assess the relation between asphyxia intensity and biochemical outcome.
MATERIAL AND METHODS: Three groups of newborn Wistar rats were submitted 15 minutes to two different levels of hypoxia (air and N_2 gas mixture) and the third one was exposed just to an air flow, then they were sacrificed. The brain was removed and frozen in liquid N_2 in less than 1 minute. After being weighted brains were homogenized and enzymatic tests for Lactate (LAC), Pyruvate (PIR), Glucose (GLU) and Lactic dehydrogenase were performed. Kruskall-Wallis test was applied as non-parametric distribution was found. (Mean ± SD).

RESULTS:	Fi O_2=21% (n)	Fi O_2=10% (n)	Fi O_2=5% (n)	
PIR/g	253.3±106(19)	309.3±150(33)	306.4±125(20)	p=0.300
LAC/g	1.17±0.36(21)	0.83±0.64(31)	1.16±0.87(19)	p=0.0064*
GLU/g	36.6±17.2(21)	34.5±11.2(38)	41.3±16.4(21)	p=0.0972
LDH/g	39.7±7.9(20)	42.4±8.8(33)	41.2±10.0(21)	p=0.1054

CONCLUSIONS: Results showed that groups O_2=21 and O_2=5 had closer biochemical profiles than group O_2=10 did with each other. We can conclude that non proportional relation exists between the degree of hypoxia with the basic biochemical outcome during short hypoxic exposition periods.

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TWO-YEAR OUTCOME IN THE EXTREMELY LOW BIRTHWEIGHT INFANT: HOW DOES THE <800 GRAM INFANT COMPARE?
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OBJECTIVE: In the pre-surfactant decade 1981-90, Monash Medical Centre actively treated all liveborn infants considered viable. The paper compares perinatal and 2-year outcomes of infants of borderline viability <800g with those 800-999g.
DESIGN AND METHODS: Cohort study of 437 liveborn and 195 long-term survivors. One hundred and eighty five (95%) survivors were reviewed at 24 months corrected. Analysis was by chi-square and t-test, with p<.05 significant.
RESULTS: Comparing the 225 <800g and 212 800-999g infants liveborn in 1981-90, significantly more <800g infants died pre-discharge (69 vs 32%, p<.00001), within 24 hours (62 vs 35%, p<.0004), and without life support measures (27 vs 7%, p<.0009). Seventy <800g and 144 800-999g infants were discharged alive; 12 <800g and 7 800-999g infants died post-discharge. Hospital survivors <800g had more days ventilated (44 vs 32, p<.005), on oxygen (78 vs 48, p<.02), in intensive care (58 vs 42, p<.001) and hospitalized (127 vs 99,p<.004), and also more bronchopulmonary dysplasia (62 vs 40%), p<.009) and patent ductus arteriosus (76 vs 60%,p<.05) but not periventricular haemorrhage (39 vs 45%, ns). At 2-year review the 57 <800g and 128 800-999g children did not differ significantly in growth centiles, in post-discharge illness as judged from hospitalization rates, or in presence of major or minor disability (major: 21 vs 26%; minor: 52 vs 50%). Children <800g had higher Bayley Mental Development Index (MDI) scores and similar Psychomotor Index (PDI) scores (MDI:99 vs 92, p<.05; PDI:88 vs 89, ns).
CONCLUSION: Compared with children 800-999g, those <800g had a lower survival rate and required more hospital care; at 2 years they scored higher on the Bayley MDI and showed no disadvantage on either paediatric or psychological examination.

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INCIDENCE OF ISCHAEMIC-HAEMORRHAGIC BRAIN LESIONS OTHER THAN INTRAVENTRICULAR HAEMORRHAGES IN PREMATURE INFANTS BORN BEFORE 29 WEEKS' GESTATION. A PROSPECTIVE ULTRASOUND STUDY. Olivier Claris, Alexandre Lapillonne, Bernard L. Salle. Department of Neonatology, Hôpital Edouard Herriot, Lyon, France.

Our aim was to determine the incidence of ischaemic-haemorrhagic brain lesions other than intraventricular haemorrhages (IVH) in premature infants born at a gestational age (GA) < 29 weeks. Between 1986 and 1991, 102 infants < 29 wk GA (ranges : 24-28 wk) were prospectively scanned by cranial ultrasound (u/s). The 1st scan was performed as soon as possible after birth, then u/s were repeated at days 2, 3, 5, 7 and then twice a month until discharge. A 7,5 MHz transducer was used. 16 (16%) infants died < 48 h of life with a normal u/s and were excluded of this study. 18/86 (21%) infants developped ischaemic-haemorrhagic lesions into either the brain parenchyma, the cerebellum and the posterior cerebral fossa. 17 infants died in the neonatal period, and permission for autopsy was obtained in 15 of them. Parenchymal bleeding associated to large IVH and thought to be haemorrhagic of origin was seen in 13 infants (11 autopsies were done and confirmed the u/s appearance). Cerebellum was involved in 5 cases : 1 isolated lesion, 4 lesions associated with extensive IVH and parenchymal bleeding (1 of these being seen only at autopsy). Posterior fossa was involved in 3 cases, all having other types of bleeding (1 only seen at autopsy). The only surviving infant had a bilateral cystic parietal and occipital leukomalacia diagnosed at 7 weeks of age, and developped cerebral palsy at follow-up. Conclusion : u/s can detect accurately ischaemic-haemorrhagic lesions, associated to IVH or isolated. In this population of very premature infants, ischaemic leukomalacia is not frequent (6%), and cerebellar lesions are not rare (28%).

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NUTRIENT BALANCE IN PRETERM INFANTS FED A PARTIALLY HYDROLYSED WHEY (PHW) INFANT FORMULA. RJ COOKE, L ROSGILLY, P WAREHAM.
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Our purpose was to compare nutrient balance between a PHW and a non-hydrolysed casein/whey (NHCW) formula. Infants (birthweight $\leq$ 1750 g, gestation $\leq$ 32 weeks, postnatal age 15 - 59 days) tolerating an enteral intake $\geq$ 100 cals/kg/d with a weight gain $\geq$ 15 g/d were studied. Infants were fed both formulas in a balanced random fashion. After a period of 4 days a 48-hour balance was done. Results were analysed using a paired t-test and considered significant at $<.05$. Nitrogen (N) intake (572 ± 58 v 503 ± 48 mg/kg/d), absorption (490 ± 60 v 453 ± 63) and retention (381 ± 55 v 369 ± 60) were not different. Stool (82 ± 18 v 49 ± 23; $p<.01$) and urinary (109 ± 76 v 84 ± 38; p,.10) N excretion tended or were greater, while % N absorption (86 ± 4 v 90 ± 6; $p<.01$), and retention (66 ± 4 v 73 ± 5; $p = .06$) tended or were less with the PHW formula. Fat and calcium balance were not different. Further analyses indicated that N and fat absorption were affected by postconceptional age and calcium absorption by postnatal age. These findings suggest that N assimilation is not greater with a PHW protein and that immaturity is a confouding variable in the interpretation of balance studies in the preterm infant.

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ABSENCE OF RELATIONSHIP BETWEEN CERULOPLASMIN CONCENTRATIONS AND CARBOXYHEMOGLOBIN IN NEWBORN INFANTS WITH JAUNDICE OF UNKNOWN ETIOLOGY.
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The aim of this study was to find out whether an inverse relationship between ceruloplasmin (CPL) levels and bilirubin production rate could support the hypothesis that CPL has antioxidant activity in vivo protecting from possible oxidative hemolysis in the first days of life.
Study subjects were 78 unselected at-term singleton newborn infants weighing >2500 g, without G6PD deficiency, blood group immunization, or clinical problems other than jaundice. The variables studied were maximum bilirubin level in the first 4 days of life, CPL and alpha-fetoprotein (AFP) concentration in cord blood, and % carboxyhemoglobin (%COHb) on the fourth day after birth, taken as an estimate of the bilirubin production rate. %COHb was measured by multicomponent analysis with correction for HbF concentration.
In a logistic regression analysis CPL levels <7.66 mg/dl and %COHb >1.1% resulted independently associated with bilirubin values >14.9 mg/dl (>256 micromol/L); odds ratios (OR) were 6.17 (95%CI=1.73-22.02) and 4.34 (95%CI=1.16-16.28), respectively. OR for AFP levels >66 mg/L was 3.17, but it was not statistically significant (95%CI=0.87-11.51). No relationship was found between CPL concentrations and %COHb.
The results of this study does not support that CPL has an important biological role in protecting from possible oxidative hemolysis in infants born at term. Low CPL levels in cord blood mainly reflect hepatic metabolism and are better predictors of hyperbilirubinemia than high AFP concentrations.

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CHARACTERIZATION OF SURFACTANT PROTEIN C (SP-C).
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Pulmonary surfactant protein C (SP-C) is one of the pulmonary surfactant proteins. It is a small, extremely hydrophobic peptide and has a highly conservative primary structure. The protein is normally palmitoylated on two adjacent cysteine residues. One arginine and one lysine residue are positively charged. SP-C enhances the adsorption of phospholipids into the air-water interface of the alveolar space. Structure and function of SP-C were investigated. Palmitoylated and non-palmitoylated human recombinant SP-C had a high α-helix content, but the orientation of the α-helix was dependent on the presence of palmitoyl chains. The physical properties of the acylated SP-C were different from the non-palmitoylated SP-C. Two forms of canine SP-C were isolated: monomeric palmitoylated SP-C, and dimeric, non-palmitoylated SP-C. The dimerization of SP-C had no impact on the physical properties of the protein. Binding of phospholipid-vesicles to the monolayer, and insertion of phospholipids into the monolayer was dependent on the positively charged amino acids. In conclusion: 1 The positive charges of SP-C cause the binding of phospholipid-vesicles to the monolayer. 2 The calcium-independent insertion of phospholipids into the monolayer by SP-C is dependent on the orientation of the α-helix of SP-C. 3 This orientation is influenced by the presence of palmitoyl chains linked to the cysteine residues of the SP-C.

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