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AUDITORY BRAINSTEM RESPONSES IN INFANTS OF HEROIN-ADDICTED MOTHERS

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The auditory brainstem response (ABR) has proven an objective noninvasive neurophysiological tool in the assessment of peripheral and central auditory pathway integrity and maturation. These functions might be affected by intrauterine exposure to heroin.

ABR testing was performed in 17 infants of heroin-addicted mothers (GA 34.4 ± 3.6 wks, BWT 2020 ± 710 gm) during the neonatal period. Hearing acuity was assessed by threshold determination and found normal for age in all infants. Auditory pathway integrity and maturation were assessed by wave I, V and I-V interpeak latency measurements. Waves I and V were bilaterally prolonged for age in 5 infants (29%), all preterm when tested. This finding seems consistent with (transitory) middle ear dysfunction described in this age group. Central conduction time (I-V interval) was within normal limits for gestational age in all infants.

Intrauterine exposure to heroin, therefore, does not seem to significantly affect peripheral and central auditory pathway integrity and maturation. Drug effects might, however, be masked by the influence of perinatal clinical events on the ABR.

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ABNORMAL CEREBRAL ENERGY METABOLISM IN NEONATES WITH FOCAL SEIZURES.

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Two full-term neonates with focal seizures were studied by spatially-localised phosphorus magnetic resonance spectroscopy (MRS). Both had unilateral cortical lesions on computerised tomography, and have subsequently developed infantile spasms. Electro-encephalography (EEG) showed asymmetrical seizure activity before and after the MRS study.

Infant A showed marked asymmetry of global cerebral energy metabolism. The abnormal hemisphere had a phosphocreatine/adenosine triphosphate ratio (PCr/ATP) of 0.87 and PCr/inorganic phosphate (PCr/Pi) ratio of 1.97 compared to 0.41 and 1.40 in the normal hemisphere. Infant B had PCr/ATP of 0.58 and PCr/Pi of 0.92 in the normal hemisphere. The global ratios from the abnormal side were not significantly different, but spatially localised data from tissue 2 cms below the brain surface showed PCr/ATP of 1.05 and PCr/Pi of 2.63. These data suggest that phosphocreatine is increased in the abnormal hemisphere of neonates with established cortical lesions and focal seizures. Similar findings have been reported in adults with complex partial seizures.

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OUTCOME FOR INFANTS BORN AT 22-25 WEEKS OF GESTATION.

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Increasing numbers of infants born after very short gestations are being admitted to neonatal intensive care units. Because these infants are at the limit of viability, accurate population-based data are very difficult to acquire. It therefore remains important for specialist centres to describe their results. We report here the outcome for 103 infants born at 22-25 weeks' gestation and treated at University College Hospital (UCH) in 1979-1986. 55 infants were born in UCH and 48 were transferred there after birth. 69 (67%) infants died during the first year. Mortality depended on place of birth and week of gestation; all infants born before 24 weeks died. The mean birthweight of the 34 survivors was 771g (range 535-995g). All were examined at one year of corrected age using methods which have been shown to predict accurately later neurodevelopmental status (Stewart et al. DMCN 1989, in press). 7 (20.5%) infants had major impairments causing disability and 4 had minor impairments. In contrast to mortality, there was no clear relation between morbidity and gestation or place of birth. Though selection factors will have been involved in these results, we conclude that the outcome for surviving infants born at less than 26 weeks of gestation leaving a specialist referral centre is similar to that in infants born at 26-28 weeks (Stewart, in "Fetal Growth", RCOG, London, 1989, in press).

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IMMUNOHISTOCHEMICAL LOCALIZATION C5b-9 COMPLEMENT COMPLEX AND S-PROTEIN/VITRONECTIN IN CHILDREN WITH GLOMERULAR DISEASES.

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The assembly of the C5b-9 complex is important for induction of membrane damage and inflammation.In the assembly process,the complement components expose neoantigenic determinants which differs from native C5 to C9.Activation of complement systems results either in generation of a poreforming,cytolytic C5b-9 complex on a target membrane,or of a cytolytically inactive,fluid-phase C5b-9 complex in serum or plasma.Using an indirect immunoperoxidase technique,and monoclonal and polyclonal antibodies, C5b-9 and S-protein/vitronectin,were localized on kidney biopsies from 30 childrens with glomerular diseases.14 childrens presented C5b-9 deposits associated with other immune deposits (IgG,IgA,IgM, C1q,C3,C4,C9).C5b-9 deposits were detected in glomeruli (14 cases), in tubules (12 cases) and in vessels (10 cases).S-protein/vitronectin,which is a component of loose connective tissue matrix,was present in all studied kidneys,on similar and different sites.This data indicate the presence of cytolytic C5b-9 (m) complexes and of SC5b-9 complexes cytolitically inactive,with unknown functiones at present.In a 2 year survey,the patients presenting C5b-9 deposits fared worse in contrast to those without such deposits even of the same histopathological pattern.The C5b-9 deposits in the renal tissue biopsie,could be useful in the evaluation of prognosis of glomerular disease.

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HERPES SIMPLEX VIRUS INDUCED ALPHA INTERFERON PRODUCTION IN NEWBORN INFANTS.

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This study was made to investigate the Herpes Simplex Virus (HSV) induced alpha interferon (IFN) production as a part of the immunological defense system in newborn infants.

Umbilical blood samples were taken directly after birth in 31 infants born after 24 - 42 gestational weeks. The leukocytes were isolated and IFN-production was induced using glutaraldehyde fixed HSV infected human WISH-cells. The frequency of IFN-producing cells was determined by immuno-plaque technique.

The proportion of IFN producing cells was $0.5/10^4$ peripheral blood leukocytes (PBL) in preterm infants, $4.3/10^4$ PBL in term infants and $8.6/10^4$ PBL in adults. The calculated IFN-production/IFN-producing cell was 1.2 U in preterm infants, 2.3 U in term infants and 3.3 U in adults. Adding a supernatant from adult PBL induced for 6 hours by HSV-infected cells to the cultures increased the proportion of IFN-producing cells to $1.2/10^4$ in preterm infants and $8.1/10^4$ in term infants.

Thus newborn infants have a significantly lower proportion of IFN-producing cells than adults. Adding a supernatant from adult induced PBL eliminates this difference in term infants but not in the preterm infants.

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ESSENTIAL FATTY ACIDS IN CORD BLOOD LYMPHOCYTES OF INFANTS "AT RISK" FOR ATOPY.

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Essential fatty acids (EFA) are important components of phospholipids of cell membrane and are precursors of inflammatory mediators such as prostaglandins leukotrienes. Hansen first reported (1937) a decrease in plasmatic levels of EFA in subjects with atopic dermatitis (AD) and a clinical improvement with dietary supplementation of fresh lard or maze oil. The studies on ecosanoids metabolism have recently focused the attention on the EFA levels in different diseases. We previously showed a correlation between the decrease of C20:4 and C20:3 in PBL of 30 children with moderate to severe AD. In order to investigate the role of EFA in the development of atopic diseases we undertook a prospective study on 34 cord blood lymphocytes of infants "at risk" for atopic diseases and 30 cord blood control. The analyses were performed by a combined technique of thin layer chromatography and gas chromatography on capillary column. The preliminary results showed a significant decrease in C 20:4, C 20:3, and in the ratio polyunsaturated/saturated EFA in the cord blood lymphocytes of infants "at risk" in respect to control group. No relation was found between high (>0.8 U/ml) IgE in cord sera and decreased levels of arachidonic acid in lymphocytes. The clinical and immunological followup of "at risk" infants can clarify if EFA changes may be a basic and predictive feature of AD.