67 CEREBRAL BLOOD VELOCITIES AND THEIR VARIABILITY IN DIFFERENT SLEEP STATES IN THE NEWBORN INFANT.

F.Cowan (Introduced by S.Halvorsen) Depts. of Physiology, University of Oslo & Pædiatrics, Ullevål Hosp. Oslo, Norway. This study was planned to determine the variability of cerebral arterial blood velocities in normal newborn infants. Velocities were measured in intracranial arteries and the internal carotid artery using pulsed bidirectional doppler ultrasound in 15 fullterm infants, 4-5days old, in both active(REM) and quiet (NREM) sleep continuously for periods of 1 to 6 mins. without movements. The doppler signals were analysed by computer and the time averaged mean velocity calculated per consecutive heartbeat. Internal carotid artery velocities always varied more in REM than NREM sleep (mean c.v. 8.4% v 6.3%) but this difference was less marked in the intracranial arteries (mean c.v. 8.5% v 7.5%). In both states sudden spontaneous increases and decreases in velocities occurred (most often in REM) and also regular cyclical variations (most often in NREM) at 2-5c/s and 35-45c/s. The latter was clearly related to respiratory rate. Heartrate also varied considerably, sometimes in phase with, sometimes independently of the velocity variations such that it was not possible to conclude that velocity variations were always secondary to heartrate fluctuations. Cyclical velocity variations were most marked in periods of quiet regular or periodic breathing and may be the results of interactions between the central and peripheral control of respiration, blood pressure and temperature.

68 INCREASED PERIVENTRICULAR ECHODENSITIES IN VERY PRETERM INFANTS AND PREDICTION OF EARLY NEURODEVELOPMENTAL OUTCOME.

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Increased periventricular echodensities in preterm infants appear usually to be transient, but occasionally evolve into cystic periventricular leukomalacia. The purpose of this investigation was to find out whether the detection of increased echodensities improved the prognostic significance of abnormalities detected in the brain of very preterm infants by ultrasound scanning. In 1983, the brains of 122 infants born at less than 33 weeks of gestation who were admitted to the Neonatal Unit of University College Hospital were repeatedly scanned. Classification of the results was as previously described (1), but in addition the absence (n=103) or presence (n=19) and degree (+ or ++) of increased periventricular echodensities was noted. Neurodevelopmental assessments (1) were performed on all the infants at 1 year of age. The table shows the prevalence of neurodevelopmental abnormalities (including both major and minor abnormalities) at follow-up.

Ultrasound classification	Increased echodensities			Total
	Absent	+	++	
Normal	1/53	0/4	0/1	1/58
Uncomplicated periventricular haemorrhage	7/31	1/8	2/2	10/41
Mild ventricular distension	5/14	0/2	1/2	6/18
Hydrocephalus and/or cerebral atrophy (including cysts)	4/5	0	0	4/5

The results provided no evidence that the presence of increased periventricular echodensities aided the assignment of prognosis.

1. Stewart AL et al. Arch Dis Child 1983; 58: 598-604.

69 MYELIN BASIC PROTEIN (mbp) IN THE CSF OF NEWBORNS.

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QUESTIONS: 1. Is mbp present in the CSF of ill newborns of any gestational age having experienced perinatal hypoxia, intracranial hemorrhage, convulsions, apnea, hypoglycemia, meningitis or any combination of these events; 2. Are mbp-positivity or negativity of prognostic value for psychomotor development; PATIENTS AND METHODS: A spinal tap was performed in 115 newborns at latest 120 hours after the above mentioned events as part of septic workup. Mbp was determined by radioimmunoassay (mbp-positivity: 1 ng/ml CSF). 25 babies died. 58 of the 90 survivors had neurological evaluation and the Denver developmental test performed at a mean age of 24 (10-35) months. RESULTS: Mbp was found in 41 of 115 newborns (36 %). Psychomotor outcome

	mbp pos	mbp neg
Normal	11/21 (52 %)	30/37 (81 %)
Abnormal	10/21 (48 %)	7/37 (19 %)

ANSWERS: 1. Mbp is found in the CSF of 36 % of newborns after the mentioned clinical events. 2. In our patients, mbp-positivity indicates a 1:1 chance to develop normally, negativity a chance of 4:1. CONCLUSION: Mbp-determination in CSF may be of additional help in cases where evaluation of prognosis is indispensable in the neonatal period.

70 HL-60 DIFFERENTIATION BY $1,25(OH)_2D_3$ AND PMA.

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Expression of polymorphic MHC class II antigens by accessory monocytic cells is required for the ability to present antigens to T cells and to regulate immune reactivity. In man it has been shown that HLA-D contains at least three well defined loci: DR, DS(DC) and SB. We demonstrate that fresh isolated human blood monocytes evaluated by two color FACS analysis with respect to the monocyte antigen M_3 and the HLA-D determinants DC, DR may be divided into two major subpopulations: M_3^+ DR^+ DC^- and M_3^+ DR^+DC^+. The HL-60 promyelocitic cell line induced either by $1,25(OH)_2D_3$ or by PMA acquire phenotypically distinct surface markers with respect to M_3 and DR, DC antigens. Indeed $1,25(OH)_2D_3$ preferentially induce the expression of an M_3^+ DR^+DC^- monocyte population whereas PMA preferentially induce a population co-expressing the three antigens (M_3^+ DR^+DC^+). The evaluation of the ability of the induced cells to perform ADCC showed that $1,25(OH)_2D_3$, in contrast to PMA, induce an increasing killing activity. These data suggest that $1,25(OH)_2D_3$ and PMA induce the differentiation of phenotypically and functional different monocyte subpopulations. The evaluation of ADCC of cell sorted $M_3^+DR^+DC^-$ $1,25(OH)_2D_3$ induced HL-60, in comparison to the $M_3^-DR^+DC^-$ population showed that the ADCC is mainly restricted to the $M_3^+DR^+DC^-$ subset.

71 UROEPITHELIAL DEFENSE IN CHILDREN WITH URINARY TRACT INFECTIONS (UTI)

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It is well accepted that obstructive uropathy causes UTI. In patients without urological anomalies a host defense defect of the uroepithelial cells (UEC) may result in increased susceptibility to bacterial infections. Even in patients with vesicourethral reflux (VUR) and recurrent UTI the postulated defense mechanism may be impaired since a significant proportion of these patients still suffer from UTI after surgical therapy. Therefore the influence of UEC on bacterial growth was investigated in 5 groups of children: healthy donors, children with neurogenic bladder due to myelomeningocele (MMC), patients with asymptomatic bacteriuria (ABU; without obstructive uropathy) and patients with VUR after successful surgery. The last group consisted of patients with and without further recurrent UTI.- 10^5 UEC desquamated in fresh morning urine were cocultivated (37°C, 5%CO_2) with 10^8 E.coli bacteria/ml RPMI medium (uropathogenic, MR-piliated). After 30,60 and 90 minutes, samples of the bacteria-cell suspension were transferred to liquid agar plates. Bacterial colonies were visually determined after breeding for 18 hours.- Significant suppression of the E.coli growth rate was evident using UEC from healthy controls, from MMC patients and from VUR patients without UTI. In contrast, UEC from all ABU patients as well as from VUR patients still suffering from UTI did not suppress bacterial growth. The results demonstrate a relevant UEC defense mechanism in healthy donors which can be overcome by uropathies such as neurogenic bladder dysfunction. Recurrencies of UTI in ABU- as well as in successfully operated VUR-patients may be explained by a deficient UEC defense mechanism.

72 GROWTH FACTOR REACTIVE MALIGNANT CELLS IN ACUTE LYMPHOBLASTIC LEUKEMIA

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Growth and differentiation of mature lymphocytes is regulated by lymphokines. Some of these T-cell derived factors are also involved in the development of precursor cells. To investigate, whether T-cell factors are involved in the growth of acute lymphoblastic leukemia (ALL) cells of non-T-non-B-type, we have cultured bone marrow cells of ALL patients in the presence of: 1. normal culture medium, 2. supernatant (SN) from stimulated monocytes, 3. SN from stimulated tonsillar T-cells, 4. Lymphocult-T-LF (Biotest). In three out of eight cases studied so far the malignant cell continued to proliferate in the presence of tonsillar T-cell SN for up to three weeks. In contrast, in the presence of medium or the other SN tested, the cells died rapidly in vitro. Furthermore, dosedependent growth induction by tonsillar T SN could be demonstrated by ^{3}H-Thymidine uptake. Phenotypically all cases studied have been classified as common-ALL expressing markers of B-cells defined by monoclonal antibodies. In addition to this particular phenotype, the clinical course in two patients showed progressive disease despite intensive chemotherapy. According to BFM-83 protocol, both patients had a low risk factor with respect to relapse. Thus, investigstions on growth regulation in ALL cells in vitro may not only give new insights into the biology of ALL, but may also be important by functionally defining particular subgroups of ALL.