37 PREDICTION OF SURVIVAL AND MORBIDITY IN INFANTS OF BIRTHWEIGHT < 801 g.

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The dilemmas of providing intensive care for extremely low birthweight infants stem from high mortality and morbidity rates, and the high cost of survival, both in human and economic terms. Where resources are limited, prediction of outcome early in the course may help in determining priorities. In this study we used multiple logistic regression analysis to determine the variables indicating severity of illness in the first 24 hours of life which made an independent contribution to the prediction of survival to 28 days. The patient material consisted of 106 outborn infants of birthweight < 801 g admitted between 1980 and 1984. At 8 hours of age, birthweight (p= 0.041) and FiO_2 (p=0.002) were independent variables predicting survival. At 16 and 24 hours of age, body temperature (p=0.002 and 0.004), pH (p=0.002 and 0.047), and presence of spontaneous breaths (p=0.046 and 0.007) independently predicted survival. A statistical model based on the method of maximum likelihood was computed on the basis of these variables. Accuracies of prediction of survival and of death were in the range 77-83 per cent at each of the above ages. All 7 infants whose predicted chances of survival were < 0.5 at 16 hours of age had handicapping sequelae by 3 months of age, or died between 28 days and 3 months of age. Only 3 of 49 infants with chances of survival ≥ 0.5 had these outcomes. It is concluded that 1. Use of measures of severity of illness can give predictions of survival and of death with about 80% accuracy. 2. Survival "against the odds" is associated with severe sequelae of prematurity.

38 DEFICIENT ANTIBODY FORMATION TO ORAL PROTEIN IN PREMATURE INFANTS. I. Helms and C. H. L. Rieger. Zentrum Kinderheilkunde, University of Marburg, Deutschhausstraße 12, 3550 Marburg, FRG.

Antibodies to Casein (Ca), Lactalbumin (LA), Lactoglobulin (LG) and Bovine Serum Albumin (BSA) were determined by direct ELISA at 4 weeks and at 24 weeks of age in premature infants. Controls were age matched term infants. At 4 weeks, antibody concentrations were significantly lower in preterm infants. Although at 24 weeks the response to all 4 antigens was still lower in preterm infants the difference was only significant for anti BSA (α < 5 %, Mann-Whitney-U-test)

		4 weeks		24 weeks	
		Preterm	Term	Preterm	Term
Ca	Median	360 E.U.[1]	2525 E.U.[2]	5750 E.U.	15000 E.U.
	Range	0 - 1400	1100 - 7750	160 - 43000	1450 - 80000
LA	Median	150 E.U.	477 E.U.[3]	3057 E.U.	3200 E.U.
	Range	0 - 425	100 - 6250	55 - 55000	825 -100000
LG	Median	240 E.U.	4625 E.U.[2]	2900 E.U.	3400 E.U.
	Range	0 - 1300	3400 -18000	0 - 11000	900 - 28000
BSA	Median	130 E.U.	535 E.U.[4]	240 E.U.	1330 E.U.[4]
	Range	0 - 1300	0 - 7000	0 - 4250	270 - 10200

[1] ELISA Units [2] α < 0.1 % [3] α < 1 % [4] α < 5 %

Antibody formation in premature infants was found to be deficient against all 4 antigens at 4 weeks and against BSA even at 6 months of age.

39 MOLECULAR PROPERTIES OF C3 CONVERTING FACTOR (C3 COF)

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We have recently identified a yet undescribed factor in serum of an 8 year old girl with meningococcal septicemia. This factor caused hypercatabolism of the third component of complement, C3, in vivo and in vitro even in the absence of divalent cations and was termed C3 converting factor C3 CoF. Studies were undertaken to characterize this factor. On gel filtration using HPLC equipment and a TSK SW 4000 blue column two protein-containing fraction of serum were found to be able to induce C3 conversion in vitro: In the IgG-region significant activation of normal C3 occured in the presence of Mg-EGTA but not in EDTA. C3 CoF activity, in contrast, was cofiltrated with IgM. The IgG fraction was isolated from the patient's serum by ammonium sulphate precipitation, anion exchange chromatography and affinity chromatography to apparent homogeneity on immunoelectrophoresis. It had all the properties required to define patient's IgG as C3 nephritic factor C3 NeF and, thus, no longer raised our interest. For the approximately 900 kD protein further biochemical data could be obtained: It is a β2-globulin, precipitable by low ionic strength buffer (=euglobulin), partly heat-resistant at 56°C, requires neither Mg nor Ca and cannot be inhibited by soy bean trypsin inhibitor at 5 mg/ml. This is, to our knowledge, the first case where two different activators of C3 simultaneously occur, one with known properties (C3 NeF) and one yet undescribed (C3 CoF).

40 DEVELOPMENT OF ANTI-INTERFERON (IFN) ANTIBODIES AFTER LONG-TERM THERAPY WITH IFN-BETA

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IFN is now widely used in clinical trials as antiviral and anticancer drug. Patients receiving IFN for treatment of malignant diseases are often treated for long time periods. One of the diseases in which beneficial effects of IFN-beta therapy have been reported is the nasopharyngeal carcinoma (NPC).

When studying the effects of long term IFN-beta treatment in patients with NPC we detected neutralizing antibodies of IgG type in the sera of three (out of three) patients treated for more than 5 months with a partially purified IFN-beta preparation. The antibodies neutralized only IFN beta and did not react with IFN-alpha or IFN-gamma. However, the antibodies not only neutralized the IFN beta present in the preparation used for therapy but also native (crude) and recombinant IFN-beta. Furthermore, the antibodies completely abolished the antiviral as well as the antiproliferative and the NK-boosting capacity of IFN-beta.

Our data indicate that during long term IFN-beta therapy antibodies may develop which neutralize the antiviral and the putative antitumor activities of exogenous IFN-beta but which, in addition, may also interfere with endogenous IFN production.

The results stress the importance of regular screening for neutralizing antibodies in the sera of patients on interferon therapy beyond the fifth months.

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ESPR—Abstracts for Poster Presentations

41 SIMULTANEOUS OCCURENCE OF RECURRENT MENINGITIS AND EPIGLOTTITIS CAUSED BY IDENTICAL STRAINS OF HAEMOPHILUS INFLUENZAE TYPE b IN SIBLINGS WITH COMPLEMENT DEFICIENCY.

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Unusual presentation of infections by encapsulated microorganisms suggests the presence of either particular microbial virulence or a defect in host defense mechanisms. In a native Swiss family of unrelated parents we investigated the organisms of recurrent meningitis in a 2 y old girl and of epiglottitis in her 6 y old brother occuring simultaneously with the 2nd episode of meningitis. Serotyping, biotyping and analysis of outer membrane proteins by SDS-polyacrylamide gels revealed identical strains of H. influenzae type b, biotype I, which was also recovered from the nose of an additional healthy brother. Complement analysis revealed complete isolated deficiency of C2 in both affected children (homozygotes) and decreased C2 levels in both parents (heterozygotes).

Complement	Father	Mother	Daughter	Son	Normal Val.	Method
C H 50	50%	50%	None	None	100%	Hemol. titr.
C2	54%	44%	None	None	100%	Hemol. titr.

In conclusion, the same organisms were responsible for 2 episodes of recurrent meningitis and a secondary case of epiglottitis. Even though recurrence and contagiousness of systemic H. influenzae type b disease do not implicate complement deficiency, search for immune defects is warranted in such conditions.

42 SMALL FOR GESTATIONAL AGE (SGA) INFANTS: PLASMA MINERALOCORTICOIDS, GLUCOCORTICOIDS AND PROGESTINS AT BIRTH AND DURING THE NEONATAL PERIOD.

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The small adrenal cortex of SGA infants may play a role in the pathogenesis of their frequent postnatal problems. We therefore evaluated adrenocortical function of SGA infants at birth and during postnatal adaptation. In 22 vaginally delivered term infants (SGA <3rd. perc.,n=10; AGA,n=12) plasma aldosterone (Aldo), corticosterone(B),11-deoxycorticosterone (DOC), progesterone (P), 17-hydroxyprogesterone (17OHP), 11-deoxycortisol (S), cortisol (F) and cortisone (E) were longitudinally measured by multisteroid analysis by specific RIAs after Sephadex LH-20 chromatography in 250 µl samples # Relevant results are given in the table (mean values in ng/ml; * SGA vs AGA $p < 0.05$).

	SGA Umb.Art.	AGA	SGA 2h	AGA	SGA 12h	AGA	SGA 24h	AGA	SGA 7d	AGA
Aldo	0.251	0.351	0.352	*0.167	0.400	*0.201	0.351	*0.169	0.523	*0.063
B	10.9	8.51	6.69	*9.28	2.27	*5.23	3.08	*0.83	3.57	2.46
S	5.21	5.25	3.67	*8.12	1.76	*3.88	1.69	*3.33	1.07	*1.83
F	67.3	*102.6	83.1	104.0	29.2	*76.4	45.4	*27.2	40.6	34.8
E	79.0	*107.3	46.0	*83.1	37.0	*56.8	31.9	41.1	26.1	22.0

Conclusions: Obviously, SGA infants are maintaining high Aldo levels throughout the first week of life which points to an increased activity of the Renin-Angiotensin-Aldo-Axis. In contrast, the low levels of active (B,F) and inactive (S,E) glucocorticoids at 2 h and 12 h may reflect a reduced response to the stress of birth in SGA infants.

Blood samples taken of routine blood sampling.