29 PATTERN OF SUBMENTAL AND DIAPHRAGMATIC MUSCLE ACTIVITY DURING MIXED AND OBSTRUCTIVE APNEA

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For characterization of mixed and obstructive apnea persisting in infants after severe IRDS we obtained polygraphic recordings incl. submental and diaphragmatic EMG by surface electrodes in 2 wks intervals from 40-46 and at 52 wks postconc age
RESULTS: At 40 wks mixed apnea was found to be the predominant type of apnea with preponderance in NON-REM sleep decreasing in number towards 52 wks. 80% of these events had the sequence; inactive-obstructive and were almost regularly characterized by the following EMG pattern: In 80% the inactive part was initiated by a sigh with simultaneous phasic increase of both submental and diaphragma EMG. The following obstructive component showed in 54% a rhythmic diaphragma activity with a short phasic activation of the submental EMG which, however, did not terminate the apnea. Only a synchronous phasic activation of both submental and diaphragma EMG (likely to reflect active exspiration) resolved airway obstruction. Arousal didn't occur. Bradycardia frequently accompanied the obstruction and in one mixed apnea with hypoxemia the synchronous EMG activation was lacking and asystoly occurred which could be terminated by atactile stimulation alone.
CONCLUSION: Mixed apnea often accompanied by bradycardia present a regular pattern of synchronicity of submental and diaphragmatic muscle activation for terminating the apnea. Hypoxemia might be responsible for disturbing this synchronicity and thus leading to life threatening events.

30 BRAIN ULTRASOUND AND PREDICTION OF OUTCOME AT 3 1/2 YEARS.

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In a previous work(1), major handicaps could be ascribed to periventricular leukomalacia(PVL). A further follow-up study was performed in 69 infants of 34 weeks'gestation or less at 3 1/2 years, in order to assess fine psychometric abilities and cerebral functions(McCarthy Scales of children's abilities). Children were allocated in 4 groups: 33 normal scans(I), 13 isolated haemorrhage(II), 3 posthaemorrhagic hydrocephalus(III), 20 PVL(IV). The outcome was good and similar in groups I,II,III with an Intellectual General Index(IGI) of respectively 99.5±18, 104.7±10 and 103±9.6. The outcome was worse in group IV.

	PVL Frontal	Fronto-parietal	Fronto-parieto-occipital
IGI	97.7 ± 12	86.5 ± 22	60 ± 20
Major hand.	0/10	3/6	4/4

Furthermore, children in group IV without major handicap seemed to perform less well(performances,memory,motor scores)when compared to children with normal scans or isolated haemorrhage. In conclusion, major handicaps are related to the extent and type of PVL. Small lesions of PVL might represent a marker of a more diffuse injury, resulting in lower abilities at 3 1/2 years of age.
(1) Fawer et al: Arch.Dis.Child 62: 30-36 (1987).

31 Ultrastructural Localisation Of Ricinus Communis-I Lectin To Skeletal Muscle From Foetuses At High Risk For Duchenne Muscular Dystrophy

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Our previous studies have shown that a D-galactose-specific lectin, Ricinus communis-I (RCA-I), does not bind to the plasma membrane of skeletal muscle fibres in DMD whereas it does in normal muscle. RCA-I was subsequently found to recognize a M_r 370000 glycoprotein which is absent or altered in DMD (1, 2).

We have now used RCA-I to characterize the ultrastructural glycoprotein pattern of developing human skeletal muscle membranes. Five foetuses at high risk of DMD (95% by DNA probe analysis), ranging from 12 to 20 weeks gestation, were compared with five age-matched normal foetuses. The results were compared to the membrane appearance in conventional ultrastructure.

Binding of RCA-I to the muscle fibre basement membrane was consistently strong from the early stages of myogenesis, such as in fusing myoblasts. In both the normal and DMD foetuses RCA-I binding to the plasma membrane was weak but detectable at 12 weeks, more marked by 15 weeks gestation and showed strong labelling at 20 weeks gestation. No difference was observed in RCA-I binding to the plasma membrane in normal and diseased human foetal muscle.

It is concluded that a) the human foetal muscle plasma membrane is undergoing a maturation process between 12 and 20 weeks gestational age leading to an increase in expression of RCA-I binding glycoproteins; and b) that the absence of RCA-I binding glycoprotein in mature DMD muscle represents a secondary change developing in the course of the disease.

1) J Neurol Sci 63: 129-142, 1984
2) J Neurol Sci 68: 225-231, 1985

32 SEVERE ANAPHYLACTIC REACTIONS FOLLOWING COW'S MILK PROTEIN HYDROLYSATES (CMPHs) INGESTION

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It has been shown in animal model that CMPHs do not elicit any antibody response to cow's milk (CM) proteins as well as passive cutaneous anaphylaxis. In addition, babies fed with these formulas during the first months of life do not show antibodies to betalactoglobulin (BLG). All these data suggest that these formulas are not antigenic, therefore they have been employed as CM substitutes for the management of infants with CM allergy (CMA). We report here on 5 infants (4 males, 1 female) aged 3-8 mos (median age 5 mos) with IgE-mediated CMA, who experienced anaphylactic reactions when they were first fed with a small amount of a CMPHs (Alfa-Rè, Nestlé). Family history was positive for atopy in 3/5 babies. All infants had a slight atopic dermatitis during exclusive breastfeeding, positive skin tests and RAST to CM proteins as well as to Alfa-Rè. Moreover, total IgE levels were (GM) 199,5 + 5754,4 U/ml. In conclusion the data show that CMPHs can trigger severe anaphylactic reactions in children with CMA. Therefore they should be employed with great caution as CM substitutes in the management of CMA.

33 EVALUATION OF A NEW TEST (PHADIATOP) FOR THE SCREENING OF RESPIRATORY ALLERGIC DISEASE IN CHILDREN.

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We have studied the sensitivity,specificity, reliability,and predictive value of a new method,Phadiatop RIA (Pharmacia,Uppsala),in 98 children (63m,35f) aged 2-12 yrs (median 6 yrs),with symptoms and signs suggestive of respiratory allergy.Skin tests were done with: House dust,D.Pt.,Alternaria T.,Lolium,Parietaria.Total IgE were measured with the PRIST (Pharmacia,Uppsala).Specific IgE were measured with the RAST (Pharmacia,Uppsala).Based upon the history,skin tests,and RAST results,55 children were diagnosed as atopics,48 of whom were Phadiatop positive.Statistical analysis showed that Phadiatop has an 87% sensitivity, a 100% specificity,a 92% reliability,a 100% positive predictive value,and an 86% negative predictive value. In conclusion,Phadiatop RIA appears to be a simple, reliable,and useful diagnostic tool for the pediatrician and the practitioner for the screening of allergic respiratory disease in children.

34 SERUM CORD BLOOD (CB) IgE IN PRETERM AND TERM NEWBORNS

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With the Phadebas IgE PRIST (modified to detect IgE up to 0,04 IU /ml)we have determined total CBIgE in 100 preterm newborns of varying gestational ages, in 47 term neonates with no atopic parentage , and in 390 at risk for atopy term neonates. IgE levels were also measured in males and females to evaluate possible differences between the two sexes. CBIgE (IU/ml, GM+2SD)were as follows. 0,009+0,71 in 7<28-wk-old, 0,045+1,2 in 54 28-32-wk-old, 0,052+1,66 in 39 33-37-wk-old, 0,041+1,05 in 47 term, and 0,295 + 5,12 in the 390 at risk neonates. There are no significant differences between preterm and term neonates. Newborns of atopic parentage have IgE levels significantly higher ($p<0,0005$) than the levels in neonates of not atopic parents.Males have CBIgE higher than females ($p<0,025$) in agreement with the higher incidence of atopy in males than in females. Even higher differences exist dividing both the 47 not at risk and the 390 at risk neonates according to sexes ($p<0,0005$). We stress that CBIgE can have very low levels, often lower than 0,5 IU/ml. It is therefore mandatory to use more sensitive tests when doing such studies.