25 GROWTH RETARDATION OF INFANTS WITH CONGENITAL POSTURAL DEFORMITIES

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Personal clinico-pathological and epidemiological studies during the last 16 years strongly suggest that certain congenital deformities of the musculo-skeletal system, including sternomastoid torticollis, postural scoliosis, congenital dislocation of the hip and talipes, are caused by mechanical factors operating in late fetal life. Study of 6756 infants born consecutively in hospital revealed that such deformities were present in 2%; they were multiple in a third of cases and tended to occur in association with each other /$P < 0.001$/. Individually, and as a group, these postural deformities had a number of prenatal characteristics in common, including an association with first pregnancies /$P < 0.001$/, maternal hypertension /$P < 0.001$/, and breech presentation /$P < 0.001$/. In particular, they occurred in association with maternal oligohydramnios, whether due to fetal oliguria, to premature rupture of the membranes, or with placental insufficiency. Infants with congenital postural deformities tended to be "small-for-dates" /$P < 0.001$/. The evidence suggests that this growth retardation is due in part to the factors primarily responsible for maternal oligohydramnios, and in part to the effect of the oligohydramnios itself.

RESPIRATION

26 TRANSTHORACIC IMPEDANCE VARIATIONS AS VOLUME VARIABLE FOR MEASUREMENT OF PULMONARY VENTILATION AND MECHANICS IN NEWBORN INFANTS

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Transthoracic impedance /TTI/ is known to vary approximately as tidal volumes. We wanted to test its usefulness as a volume signal for calculation of pulmonary physiological parameters for clinical assessment of newborn infants. TTI variations during breathing were measured together with body volume changes measured by body plethysmography and tidal volumes by integration of the flow through the airways, recorded by pneumotachygraphy in newborn infants. Esophageal pressure was also recorded. Ventilation and parameters of mechanics of breathing were calculated from either flow/volume or TTI signals by a computer. Results: Calculations of pulmonary ventilation, compliance and resistance, provides results in good correspondence with those calculated from ordinary flow/volume signals. By this new method measurements of this kind can be made in newborn infants during prolonged periods of time and without the influence of disturbing equipment for measurement of breathing volumes.

27 PROGNOSIS OF DEFORMOUS BRONCHITIS IN CHILDHOOD

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A joint study covering the patients of four children's bronchological centers of the GDR was carried out to obtain, clarity on the importance of chronic bronchitis in childhood and its prognosis. It could be proved by bronchographic re-examinations of 220 children suffering from deformous bronchitis that by a one year's or several year's treatment an improvement or normalization of the findings can be achieved in about two thirds of the patients. Only in 22 per cent of the patients a deterioration or a conversion to bronchiectasis was observed. These remarkable results confirm our working hypothesis on the reversible character of deformous bronchitis in childhood which on the other hand may change into irreversible bronchiectasis. Deformous bronchitis constitues a serious disease and requires prolonged and comprehensive complex treatment in a special bronchopulmological dispensary care.

28 CONTROLLED TRIAL OF CONTINUOUS INFLATING PRESSURE /CIP/ FOR HYALINE MEMBRANE DISEASE /HMD/

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A controlled trial of elective intervention with CIP was performed in infants weighing >1000 g whose PaO_2 fell <60 mmHg with an $FIO_2 > 0.95$. 11 of 12 treated and 10 of 12 control infants survived. 7 treated and 6 controls needed mechanical ventilation /MV/. CIP caused a significant increase in PaO_2 and the treated infants breathed high concentrations of oxygen for a shorter period than the controls. During the trial period /31 months/ 107 other infants with severe HMD were admitted who did not meet the criteria for entry to the trial 37 survivied after breathing an $FIO_2 > 0.60$ without CIP or MV. The other 70 needed MV, usually because they were already being ventilated on arrival from other hospitals. The neonatal survival rate for infants born at U.C.H. during the study period was 88% /50/57/ and for referred infants, 69 % /51/74/. The maximum overall increase in survival rate that might have been achieved by very early intervention with CIP was 5 % /from 77% to 83%/.

29 PATENT DUCTUS ARTERIOSUS /PDA/ COMPLICATING THE "RESPIRYTORY DISTRESS SYNDROME" /RDS/

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The role of PDA in the pathogenesis and course of RDS has been debated for many years. As more intensive pulmonary care is given to preterm infants, heart failure from PDA has been increasingly recognized. In 50 preterm infants with RDS /B.W. 600-2100 gms, and G.A. 25-34 wks/ the patency of ductus arteriosus was established by single film aortography or by clinical signs and confirmation at surgery. In 14 infants, cardiomegaly and heart failure with massive left-to-right ductal shunt occurred before the appearance of heart murmur. Fourteen infants had severe and 36 mild to moderate RDS. Massive cardiomegaly occurred significantly earlier in infants with severe RDS. /2.5±0.6 vs 10.8±2.3 days/ and hence, ligation of ductus performed sooner in the severe RDS group /8.1±1.7 vs 15.4±2.5 days/. It is suggested that ductal ligation is indicated when an infant with severe RDS and cardiomegaly requires intermittant positive pressure ventilation and whose retrograde aortogram shows massive left-to-right shunt. In infants with mild to moderate RDS and PDA surgery is indicated only when respirator assistance is required to control apnea and pulmonary edema.

30 PHOSPHOLIPID CONCENTRATIONS IN AMNIOTIC FLUID FROM DIABETIC PREGNANT WOMEN

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Newborn infants of mothers with diabetes mellitus have a higher incidence of the respiratory distress syndrome /RDS/ than infants of nondiabetics of the same gestational age. The pulmonary surfactant system in diabetic pregnancies was investigated by quantitative analysis of lecithin and sphingomyelin in 104 samples of amniotic fluid from 65 diabetic patients. The phospholipid concentrations have been related to gestational age, the state of diabetes according to White's classification, and the development of RDS. There is statistically significant evidence of accelerated surfactant production in White classes D, F, from 34 to 37 weeks gestation. Classes A,B,C, have phospholipid concentrations not significantly different from a reference material. RDS occurred in 26% and was frequently associated with mature phospholipid concentrations. Mature lecithin concentrations or L/S ratios are therefore no guarantee against RDS. There was a significant correlation between low Apgar scores and subsequent development of RDS.