167 INFLUENCE OF CLINICAL FACTORS ON MORTALITY AND MORBIDITY IN INFANTS WITH SEVERE RESPIRATORY DISTRESS SYNDROME (RDS) FOLLOWING SURFACTANT REPLACEMENT THERAPY

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In an international multicenter trial infants with clinical and radiological signs of severe RDS were randomized to receive either a single dose (n=176) or three subsequent doses (n=167) of a porcine natural surfactant (Curosurf). Using a logistic regression model the effects of therapy, birth weight, sex, and other clinical factors on survival and various outcome parameters were evaluated. **Results:** Mortality (13vs.21%, $p<0.05$) and the incidence of pneumothoraces (9vs.18%,$p<0.01$) were significantly lower in the multiple-dose group. Low birth weight, hospital allocation, low Apgar and initial disease severity were associated with an increased mortality. Low birth weight, hypothermia (admission temperature <36°C) and acidosis (pH<7.25) prior to surfactant treatment could be identified as risk factors for the development of an intracranial hemorrhage. **Conclusion:** Mortality and the incidence of pneumothoraces were significantly reduced after multiple-dose treatment of severe RDS as compared to a single dose regimen. 28 day outcome in surfactant treated infants is influenced by various clinical factors.

168 N-TERMINAL PROPEPTIDE OF TYPE III COLLAGEN (PIIINP) IS NOT A USEFUL MARKER OF EARLY BRONCHOPULMONARY DYSPLASIA

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Type III collagen is deposited early in progressive pulmonary fibrosis, followed by predominance of type I. Since PIIINP, a by-product of type III collagen synthesis, reflects the degree of pulmonary fibrosis in adults, we hypothesized that PIIINP in tracheal fluid may be useful as an early marker of developing BPD in neonates. Therefore we serially measured PIIINP and protein in tracheal aspirates of 41 consecutive respirator-treated very low birth weight prematures (mean birth weight 1067g, mean gestational age 28.3 weeks). Eight of the infants died and 22 infants had radiological evidence of BPD and needed extra oxygen at age 28 days. The mean level of PIIINP declined with advancing postnatal age. The concentrations in infants meeting the criteria for BPD did not differ from those without BPD during the follow-up. Neither did they correlate with the degree of BPD or of radiologically defined fibrosis. The mean (SD) PIIINP during the first 24h was 175 ng/mg protein (105) in infants who were still in respirator at age 28 days (N=13), 108 (75) in those who were weaned earlier (N=19) and 49.7 (25) in those who died before age 28 days (N=8), but such differences were not detected on day three or later. The PIIINP level in tracheal aspirate is thus not a useful marker for BPD in WLBW infants.

169 LEUKOTRIENES IN TRACHEAL ASPIRATES OF VENTILATED NEWBORNS WITH OR WITHOUT BPD.

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Leukotrienes mediating inflammation (LTB_4) and bronchoconstriction (LTC_4), may be involved in the development of bronchopulmonary dysplasia (BPD).We studied LTB_4,LTC_4, and cell counts in serial tracheal aspirates from 53 ventilated neonates (respiratory distress syndrome=RDS:21, pneumonia=INF:12, pulmonary maladaptation=PMA:10, surgery for non pulmonary disease=controls:10.In 10 infants BPD was diagnosed on day 28. Results: On day 1 leukotriene levels (LTB_4;LTC_4,ng/ml, means) were elevated ($p<0.05$) in ventilated infants as compared to controls (0.07;1.1):INF (0.89; 3.1), RDS (0.20;1.9), PMA (0.17;3.3).During continued ventilation, no significant LTB4;LTC4 changes were observed. At age 30 to 50 days, in BPD-infants levels were 0.38; 4.0.Leukotrienes did neither correlate with cell count nor with oxygen requirement nor mean airway pressure. Conclusions: Longterm leukotriene elevation may indicate recurrent infections which may aggravate BPD, but is not of prognostic significance.

170 PULMONARY FUNCTION IN RELATION TO EARLY DEXAMETHASONE TREATMENT IN VERY LOW BIRTH WEIGHT (VLBW) INTUBATED INFANTS.

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To determine the changes in pulmonary function before and during dexamethasone (D) therapy in VLBW ventilator dependent infants at high risk for chronic lung disease (CLD), we are conducting a randomized study in infants that failed weaning from mechanical ventilation at 7-14 days of age; 15 patients (BW 620-1000g, GA 25-30 weeks) have been enrolled; 7 infants received a 7 day course of D (0.5mg/Kg/day IV for 3 days, 0.25 mg/Kg/day for 3 days and 0.1 mg/Kg/day for 1 day),and 8 patients were controls(C). At comparable mean airway pressure and FI02, respiratory compliance (Crs) and resistance (Rrs) were measured before and on days 2, 5 and 7 of D therapy (PeDS). We monitored airway pressure, flow and tidal volume (VT) and analyzed only mechanical breaths.

*p<.05 (ANOVA)	Baseline		Day 2		Day 5		Day 7	
	C	D	C	D	C	D	C	D
VT ml/Kg	7.3	7.8	7.0	11.3*	7.3	12.3*	8.0	11.9*
Crs ml/cmH20/Kg	.43	.40	.37	.64*	.42	.67*	.41	.72*
Rrs cmH20/L/sec	126	123	137	131	142	136	150	122

D therapy was associated with a significant reduction of FI02 and mean airway pressure, a temporary increase in BP was noted in two patients. We conclude that early D therapy in VLBW infants markedly improves Crs and VT, a decrease in Rrs is also observed.

171 DEVELOPMENT OF BPD DURING A 6-YEAR PERIOD IN INFANTS WEIGHING LESS THAN 1500 g

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BPD is an important cause of late morbidity in preterm infants with RDS. We investigated the development of BPD in 216 neonates weighing less than 1500 g during a 6-y period. The criteria for BPD and severity of RDS were defined. The results are shown in the table.

Table. (* p<0.05)	n	BPD(%)	Surv(%)
Mild RDS	68	4.4	89.7
Moderate RDS	41	17.1*	78.0
Severe RDS	45	28.9*	55.6
no RDS	62	3.2	85.5
<1000 g	72	22.2*	63.9
1000-1249 g	69	11.6*	81.2
1250-1499 g	75	1.3	92.0
Total	216	11.6	79.2

In infants with BW ≥1250 g only one infant of 75 developed BPD. Incidence of PDA was higher in infants with BPD than without BPD ($p<0.001$). Six infants of 25 with BPD died during their first year of life. Nine infants had some degree of developmental sequelae and 10 infants were considered healthy at one year of age.

172 WATER AND HYALURONAN CONTENT IN THE LUNGS IN THE PERINATAL PERIOD - an experimental study in rabbits.

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Little is known about the role of hyaluronan in perinatal lung water balance. After birth interstitial lung water gradually decreases. Later, an increase may occur due to functional disturbancies or inflammatory processes. The aim of the present study was to elucidate the changes in water and hyaluronan content in the lungs after preterm birth. Lungs were taken for analysis from rabbit pups born one or two days before term at different postnatal ages. In both gestational age groups, water content measured as wet/dry weight quotient decreased during the first day of life from 9/1 to 6-7/1, and then remained at that level during the next four days. In pups born 1 day before term hyaluronan content measured by a radiometric method as ug/g dry weight averaged 206 at birth, increased to a peak of 382 at 3 days of age ($p<0.02$), and then decreased again. In pups born 2 days before term the hyaluronan content reached a peak at 4 days of age. Conclusion: The immediate postnatal decrease in lung water content in healthy preterm rabbit pups is not accompanied by an over-all decrease in pulmonary hyaluronan.