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CEREBRAL BLOOD FLOW VELOCITY (CBFV) IN PRETERM INFANTS TREATED WITH SURFACTANT. Margot van de Bor and Frans J. Walther. Dept. of Pediatrics, Univ. of Southern California, Los Angeles, California, U.S.A. Intratracheal instillation of exogenous surfactant reduces the severity of respiratory distress syndrome

(RDS), but has the potential to affect cerebral blood flow. We measured CBFV in the anterior cerebral artery with 2-D/pulsed Doppler ultrasound in 7 preterm infants treated with surfactant at 2-24 h of age for severe RDS (a/A ratio  $\leq 0.22$ ). Birth weights ranged from 1120 to 2000 g and gestational ages from 28 to 31 weeks. CBFV was measured before and 5, 10, 15, 20, 30, and 40 minutes after the instillation of surfactant. Mean arterial blood pressure was recorded from an indwelling umbilical arterial line, blood gases were obtained by transcutaneous monitoring. Peak systolic, end diastolic, and mean flow velocities increased immediately following surfactant administration with a simultaneous drop in pulsatility index, but returned to pre-surfactant values by 30 min. Mean arterial blood pressure increased and heart rate fell in the immediate post-surfactant period, but recovered quickly. Transcutaneous pO<sub>2</sub> rose sharply following surfactant administration, whereas pCO<sub>2</sub> remained stable or decreased slightly. These findings indicate that intratracheal instillation of surfactant has short-lived effects on cerebral blood velocity, which are correlated with the simultaneously occurring changes in mean arterial blood pressure.

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CONTROLLED MULTICENTER CLINICAL TRIAL OF BOVINE SURFACTANT (SF-RI 1) FOR PREVENTION OF RESPIRATORY DISTRESS SYNDROME IN VERY PREMATURE INFANTS.

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**Patients and methods:** A controlled multicenter clinical trial was carried out to determine the effect of bovine surfactant (SF-RI 1) given to very premature infants ( $\leq 30$  weeks GA) during the first hour after birth. The SF-RI 1 group (n=34, GA  $\pm$  SD 28.0 $\pm$ 1.6 weeks, birth weight 1048 $\pm$ 299 g) received 50 mg/kg bovine surfactant during the first hour after birth and the control group (n=35, GA 27.6 $\pm$ 2 weeks, birth weight 969 $\pm$ 269 g) received air via the ET tube. Re-treatment with identical doses (maximum 3 additional doses) was permitted. The primary outcome was categorized as survival without BPD at 28 days (criteria: ventilator dependence or FiO<sub>2</sub>  $> 0.3$  during spontaneous respiration).

**Results:** Survival rate without BPD was significantly higher (p=0.002) in SF-RI 1 infants (26/34) than in control infants (14/35). Surfactant treatment acutely improved lung function (FiO<sub>2</sub>↓, pA/AO<sub>2</sub>↑, MAP↓) during the first hours after birth. No differences were observed between both groups comparing the incidence of PDA, IVH, NEC and other nosocomial infections.

**Conclusion:** Early treatment with SF-RI 1 acutely improves pulmonary function and survival without BPD in very premature infants at risk for RDS.

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SHORT-TERM CLINICAL RESPONSE AND FOLLOW-UP IN 164 BABIES TREATED WITH PORCINE SURFACTANT (CUROSURF) FOR SEVERE NEONATAL RESPIRATORY DISTRESS SYNDROME (RDS). Robertsson B., St. Görans Hosp., Stockholm, Sweden Collaborative European Multicenter Study Group

In the period 1985-88, a total of 164 babies with severe RDS (requiring artificial ventilation with  $\geq 60\%$  oxygen) were treated with porcine surfactant (Curosurf) in a collaborative project involving neonatal intensive care units in France, Holland, Northern Ireland, Italy, Sweden and West Germany. The first 77 patients were part of a controlled trial; the following 87 patients were treated without controls since the benefit of the replacement therapy had already been established (Pediatrics 82:683, 1988). Both series of patients showed a  $> 100\%$  sustained improvement of the a/APO<sub>2</sub> ratio after receiving surfactant, and the number of surfactant-treated babies surviving without chronic lung disease remained twice as high as in the earlier control group (55% vs 26%;  $P < 0.001$ ). Factors with a negative impact on the therapeutic response include low birthweight, perinatal asphyxia, and high oxygen and ventilator pressure requirements. One year follow-up data from the controlled study indicate no increased incidence of neurodevelopmental handicap among survivors in the surfactant-treated group.

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A STUDY OF THE EPIDEMIOLOGY OF PREMATURE DELIVERIES IN SOUTHERN POLAND Pietrzyk J.J., Rózański B., Mitkowska Z., Kurtyka Z. 1st Department of Pediatrics, Institute of Pediatrics, Medical Academy, Kraków, POLAND

A multicenter study of the incidence of premature deliveries has been carried out in three regions (Zakopane-Z, Nowy Sącz-NS, and Limanowa-L) of the Southern Poland. The incidence of prematurity was: 180/1614: 11.2% (Z); 253/3249: 7.8% (NS); 69/1160: 6% (L). These three populations of premature infants were fairly homogenous (ANOVA) in respect to birthweight, length and head circumference, all standardized for gestational age. In the same time all these parameters analyzed among term infants showed significant intercenter variation (F=10.7, p=0.00; F=4.2, p=0.014; F=9.84, p=0.001, respectively). Mothers of premature and term infants were characterized according to housing, education, marital status and occupation. Mothers of premature infants at Z, NS, L lived in similar housing conditions (p=0.4) and did not differ with reference to education (p=0.8) and marital status (p=0.6). However, in comparison to the NS and L mothers, the Z women were more often physical workers ( $\chi^2=31.12$ , p<0.00003). In addition, case control comparisons were performed for each above parameter within a given center. A higher percentage of premature deliveries was observed among unmarried mothers (NS:  $\chi^2=11.7$ , p=0.008) and those with lower education (NS:  $\chi^2=16.6$ , p=0.0009; L:  $\chi^2=11.8$ , p=0.008). **Conclusions:** 1. The population of premature infants in Z, NS, and L is fairly homogenous in terms of physical maturation in spite of a significant intercenter variation in prematurity incidence, 2. Hard, physical work and lower educational status of the mother, as well as illegitimacy might be considered prematurity risk factors.

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EPIDEMIOLOGY OF GROUP B STREPTOCOCCI (GBS) IN MOTHERS AND INFANTS. Arthur I Eidelman, B Rudensky, MS Schimmel, D Turgeman, N Nubani, M Isacson. Shaare Zedek Medical Center, Departments of Neonat, Clin Microb and Infect Dis., Makassed General Hospital, Depart Obstet, Jerusalem, Israel.

The incidence of neonatal GBS disease in Israel is strikingly low. As neonatal GBS colonization and disease directly relates to maternal GBS carriage, we sampled the maternal and infant Jerusalem population for GBS colonization and surveyed GBS neonatal disease to ascertain the epidemiologic relationships. As GBS serotypes vary in their virulence we also analyzed the prevalence of the different serotypes of GBS isolates.

In 1984, GBS colonization of 254 Jewish women and 189 Arab women was 5.4% and 1.6% respectively. In 1987 the rate in 116 Jewish women was 3.5%. Colonization of infants from the same mothers was 1.8%, 1.3% and 1.1% respectively. Differences between these rates was not significant. GBS neonatal disease for the period 1982-1987 was 0.2/1000 live births. Serotype distribution from 150 isolates was Type I 45%, Type II 17%, Type III 13%, other 24%.

Our data documenting the low prevalence of GBS colonization in mothers and infants and the low incidence of neonatal GBS disease supports the hypothesis that maternal GBS colonization is the major determinant of GBS neonatal disease. Furthermore the low prevalence of the virulent GBS serotype III may further explain the low attack rate.

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FACTORS ASSOCIATED WITH INFANT MORTALITY IN CHILDREN WITH DOWN SYNDROME IN ITALY. A MULTIVARIATE STUDY.

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The Italian Multicentre Birth Defects Register covers about one fourth of all births in Italy. Mortality in the 1st year of life was studied in 905 babies with Down syndrome reported to the Register between January 1978 and December 1984. Municipalities where these infants were born were asked to give confidential information about their survival at 1 year of age. In 123 cases no data were obtained. Traced and untraced subjects were comparable for sex, birthweight, place of birth and presence of heart defects; we were therefore confident that no important bias affected the results. Overall mortality in the 1st year was 20.7%. After controlling for possible confounding effects with a logistic regression analysis the following variables resulted associated with a higher mortality: birthweight  $< 2500$  g (OR=2.6; 95%CI=1.5-4.6), presence of cardiac defects (OR=5.1; 95%CI=3.1-8.7) and to be born in the southern Regions (OR=5.2; 95%CI=3.2-8.4). No difference was found between sexes. Mortality in subjects born in the South and in the North of Italy was respectively 33.5% and 15.7% (ratio=2.1). The corresponding values for the general population in 1981 were 16.3% and 12.3% (ratio=1.3). The higher ratio found in Down children suggests that the social and health care inequalities thought to be responsible for the South-North gradient might particularly affect the most vulnerable population groups.

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