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POLYUNSATURATED FATTY ACIDS IN ARGENTINIAN HUMAN MILK: IS THERE A RELATIVE DEFICIENCY IN N-3 FATTY ACIDS?

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Background: Human milk fat is the main source of energy for breastfed infants. Milk fat also transports lipid soluble vitamins and n-6 and n-3 polyunsaturated fatty acids (PUFAs), essential for the proper development of the brain, retina, and other organs. Fatty acids are the only milk lipids that can be altered to any extent by maternal dietary manipulation. Since maternal nutritional status during pregnancy is critical for the newborn, and little information exists regarding the PUFA status of populations living in Southern regions,

Objective: To study the relationship between maternal nutrition and the fatty acid composition of human milk.

Methods: Milk samples were obtained from mothers of normal nursing infants born at full term; maternal nutritional state was assessed using the body mass index. On this basis, mothers were considered as normal, overweight or obese. Maternal diet was evaluated according to a survey of frequency and quality of the food consumed. Samples of mature milk were obtained by hand expression 3 minutes into a nursing and immediately frozen at -70° C. Protein content was determined by spectrophotometry and total lipids by gravimetry. The fatty acid composition of lipids was determined by gas-liquid chromatography.

Results and conclusions: Milk protein was not affected by maternal nutritional status; the total lipid content of milk samples from obese mothers was significantly increased relative to normal or overweight mothers. Of the total n-6 fatty acids, the milk from obese mothers had significant increases in the 18:2 n-6, and of total PUFA relative to the controls. There were no differences in the proportion of fatty acids of the n-3 series. Independently of nutritional status, the ratio n-6/n-3 fatty acids was very high compared with samples from developed countries. This is leading us to devise a strategy for a new dietary approach for nursing mothers.

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VLBW INFANTS OUTCOME IN A SOUTH AMERICAN NEONATAL NETWORK FOR THE PERIOD 2000 - 2004

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Background: Neocosur is a collaborative international neonatal network created in 1997 to survey the outcome of VLBW infants in South America. Recognition of practices and outcomes variation among NICUs will allow participating centers to evaluate their performance and to select those interventions that may improve neonatal outcomes.

Aims: To describe clinical outcomes of VLBW infants admitted in 16 level III NICUs, from five South American Countries (Argentina-Chile-Paraguay-Peru-Uruguay) members of Neocosur.

Methods: All live infants with birth weight (BW) between 500 and 1500 g born in the participating centers were included. Biodemographic data and outcome measures were prospectively collected between 10/2000 and 05/ 2004. Data registration was made on line and analyzed by a central database unit.

Results: a total of 2,875 VLBW infants were included in the analysis. Mean BW was 1,085±279 g, gestational age was 29 weeks ±3). Perinatal information was as follow: 80% of mothers received prenatal care; multiple gestation 18%; antenatal steroids 69%; prenatal antibiotics 36%; 65% of the infants were delivered by cesarean section; 51% were males, 15% had Apgar scores < 3 at 1 min and 7% had Apgar scores < 3 at 5 min. Global mortality was 22% with 4% dying in delivery room; congenital malformations were present in 11% of the cohort. Morbidity: 72% developed respiratory distress syndrome; 51% received surfactant therapy (41 % one dose and 43% two doses) and 65% received mechanical ventilation (mean duration = 4 days). Oxygen requirement at 28 days was 24% and 20% at 36 weeks' postmenstrual age. Cranial ultrasound was obtained in 92% and 31% had intracranial hemorrhages, G III -IV in 11%. Early onset sepsis was confirmed in 8% and late onset in 25%. NEC incidence was 11%. Retinal examinations were performed in 70% of patients and 30% had evidence of retinopathy of prematures. Mean length of stay was 60.7+28 days.

Conclusions: This international neonatal network represents the first model in South America using standardized definitions for coding data on line. This allows to analyze and compare clinical outcomes among centers and represents a new tool for improvements of the quality of neonatal care in the region.

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PATTERNS OF FAMILY INTERACTION AND EATING BEHAVIOR IN NORMAL AND OBSE SCHOOL CHILDREN

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Background: Obesity has changed the epidemiologic profile in Latin America in the last decades. Changes in food variety and availability as well as more sedentary lifestyles have resulted in an increase of obesity at all ages. Approximately 30% of children under 5 years are overweight or obese, a percentage that increases to 40% at 6 years. Among school age children obesity and overweight have more than doubled in the last 15 years. **Aim:** To analyze family interaction patterns and their association with eating behavior in obese and normal school children. **Methods:** 56 families of 8-9 years old children attending schools in a low socio-economic level neighborhood in Santiago, Chile, were studied. In the sample selected, 50% of the children were obese and matched by sex, height and age with normal weight children. Maternal perception of their child's nutritional status, maternal depression, parental stress and the quality of home stimulation were assessed.

Results: Table 1. Maternal perception of their child's nutritional status

CHILD NUTRITIONAL STATUS		
Maternal perception	Obese (%)	Normal (%)
Wasted	0	24.6
Normal	22.0	60.0
Overweight	71.2	12.3
Obese	6.8	3.1

PChi 2 P<0.001

Table 2. Maternal and family characteristics

	Depression	Parental Stress	Stimulation
Obese	18.3 ± 11.2	113.6 ± 25.0	33.7 ± 10.6
Normal	18.6 ± 15.6	126.4 ± 27.7	38.6 ± 6.8
	N.S.	P<0.03	P<0.01

The perception that mothers have of the nutritional status of their children is distorted. Only about 7% of obese children are perceived as such and approximately 25% of the normal children are perceived as wasted. In the assessments aimed at measuring direct mother-child relationship, the obese group showed that mothers have more difficulty in bringing up their children and that the quality of stimulation in their home was poorer. Mothers in both groups had intense depressive symptoms.

Conclusions: There is a deep and dynamic relationship between infant obesity and maternal characteristics which must be known and worked on previous to any nutritional intervention. Supported by DI, Universidad de Chile.

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SEVERITY, PROPORTIONALITY AND RISK OF NEONATAL MORTALITY OF VERY LOW BIRTH WEIGHT INFANTS WITH FETAL GROWTH RESTRICTION. A MULTICENTRIC SOUTH AMERICAN ANALYSIS

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Background: In our region, the contribution of very low birth weight infants (VLBW, < 1500 g) to overall neonatal mortality reaches 50-70%. Among these infants, the outcome is worse for those who are small for gestational age (SGA).

Aims: 1) to evaluate the severity and proportionality of SGA neonates among VLBW infants of the Neocosur Collaborative Group according to gestational age; 2) to estimate the risk of neonatal mortality associated with being SGA and its severity and proportionality. Population: the prospective continuous registry of Neocosur (18 Neonatal Units of Chile, Argentina, Peru, Paraguay, Uruguay, and Brazil), including all VLBW infants (25- 36 gestational weeks; n = 1518). Exclusion criteria: lethal congenital anomalies.

Methods: Design: observational. Anthropometric indexes: a) BW < 3rd and 10th centile; b) Severity of IUGR (FGR, fetal growth ratio = observed weight/mean BW for GA); not growth retarded: FGR 0.90 - 1.10; mildly retarded: FGR 0.80 - 0.89 , moderately retarded: FGR 0.75 - 0.79 and severely retarded: FGR < 0.75; c)Proportionality: coefficient of bimodality (values >0.55 indicate substantial body asymmetry) and Z Score of the Ponderal Index (PI = g/cm3+100; < -1 SD suggest asymmetric IUGR); d) neonatal mortality until discharge.

Results: < 3rd centile: 13.5% (p< 0.001); < 10th centile: 31% (95% CI 28.6-33.2;p<0.001); FGR: 0.90 + 0.21 (p<0.001); mildly retarded FGR: 20.8%, moderately retarded FGR: 8.7% and severely retarded FGR: 32.6%. Coefficient of bimodality: 0.53; Ponderal Index: 2.27 + 0.51; Z Score PI: 0.007 + 1.0; Z Score PI² for trend by increasing GA: p = 0.178 and for decreasing FGR p< 0.001). Maternal hypertensive disease was systematically associated with an adjusted odds ratio of being SGA (aOR 1.86, 95% CI 1.38-2.5), FGR < 0.89 [adjusted Odds Ratio (aOR) 2.89, 95% CI 2.18-3.83] and Z Score PI < -1 (aOR 1.81, 95% CI 1.18-2.76). aOR for neonatal mortality were 2.64 (95% CI 1.71-3.92) for SGA; 3.04 (95% CI 2.12-4.36) for FGR <0.89, and 1.37 (95% CI 0.80-2.32) for Z Score PI < -1.

Conclusions: SGA, mostly symmetric and severe, is a frequent condition in infants with VLBW, and it is associated with higher mortality rates.

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“MECONIUM ASPIRATION SYNDROME (MAS)”

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Background:The meconium aspiration syndrome (MAS) remains as one of the most frequent causes of respiratory distress in term newborns. Nearly half of these patients require mechanical ventilation; in this group mortality rises to 18%. Some studies have suggested that acute oxygenation parameters benefit when surfactant is used.

Methods: We designed a multicenter randomized study to evaluate whether in term newborns with severe MAS, the use of natural surfactant reduces the number of days on mechanical ventilation when compared to placebo.

Results and conclusions: No significant differences in any of the outcomes measured were evident. The four existing studies combined show a RR 0.70 (IC 95% 0.50-0.97) for extracorporeal membrane oxygenation (ECMO) requirement or death. With this evidence, deviating resources from the National Surfactant Program to treat MAS should be considered in the context of current healthcare priorities.

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DESIGNING A SCORE FOR ASSESING ETIOLOGY IN CHILDREN WITH PNEUMONIA

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Background: Although an etiological diagnosis is important for therapeutic decisions in children with pneumonia, this is often based on clinical, laboratory and radiological findings on admission.

Aim: To design a score for assessing etiology in children with pneumonia.

Subjects and methods: 175 children were studied, aged 1 to 59 months, hospitalized for pneumonia with its etiological diagnosis confirmed (127 viral and 48 bacterial). Predictor variables were age, axillar temperature, WBC, total neutrophils, band forms and chest X-ray (according to Khamapirad score). t-test or chi² were used, when appropriate, to assess the associations between each predictor and the etiology. To make these variables dicotomic (except for radiology), the best cut-off value was established for each of them by receiver operating characteristic (ROC) curves. Logistic regression was used to obtain coefficients. By applying them and the X-ray value (according to Khamapirad) a score was defined. Finally, and using a ROC curve a cut-off value for predicting etiology (bacterial or viral) score was established.

Results: All predictors showed significant associations with outcome (p < 0.001). After logistic regression, the final score included: age >= 9 months (3 points), axillar temperature >= 39.0 °C (3 points), total neutrophils >= 8000 (3 points), band forms >= 5 % (1 point) and chest X-ray (-3 to 7 points). The cutoff value was established at >= 5 points where the score achieved a sensitivity of 97.9 %, a specificity 93.7 %, and a positive predictive value of 85.4 %, in the prediction of a bacterial etiology.

Conclusions: our score was useful in the assessment of a bacterial etiology in children with pneumonia. This core will allow faster and more accurate therapeutic decisions, allowing a more rational antibiotic use.