Postnatal growth restriction in very low birth weight newborn infants. A multi-variated model analysis.

Authors: Gastón P. Pérez, Ricardo M. Nieto, Nestor A. Dinerstein, Claudio L. Solana, Mario Carrara, Diana Kelmansky, Debora Chan. Neonatology Department, Maternidad Sardá, Buenos Aires; Fresenius Kabi Argentina, Buenos Aires; Calculation Department, Exact Sciences College, University of Buenos Aires, Buenos Aires, Argentina.

Introduction: At 40 weeks of post-menstrual age (PMA), preterm infants born with very low weight (VLBW) frequently shown extra uterine growth restriction (EUGR) process, which affects, in variable proportions, weight (W), body length (L) and head circumference (HC). **Objective:** To analyze clinical factors associated with low weight, low BL and HC at 40 weeks of PMA. **Methods:** Cohort study. Inclusion criteria: inborn infants with gestational age (GA) <32 weeks and BW <1500 g, analysed until 40 weeks of PMA. Exclusion criteria: major congenital malformations, confirmed intrauterine infections and patients transferred to another hospital before 40 weeks PMA. Statistical analysis: three logistical regression models were constructed. **Results:** From 08/2001 to 11/2005, 339 preterm infants were born, 238 met the inclusion criteria. Mean BW was 1144 g (SD 234g), mean GA: 28.4 weeks (SD 1.66 w); low BW frequency (<10th Pc) was 9.2%; CRIB Score >5: 11.3%; bronchopulmonary dysplasia (BPD): 36.6%; late onset sepsis (LOS): 26.9%; necrotizing enterocolitis (NEC): 1.7%; patent ductus arterious (PDA): 46.6% and combined morbidity (PDA, BPD and LOS): 60.1%. Weight, BL and HC frequency lower than 10 th percentile at 40 weeks of PMA were respectively 52%, 8% and 47%. The multivariated analysis showed the following variables as predictors of W lower 10 th percentile at 40 weeks of PMA : GA (OR: 2.01, IC 95%: 1.52-2.66), combined morbidity (OR: 2.85, IC 95%: 1.43-5.69), birth weight (OR: 0.53, 95 % CI 0.43-0.66) and caloric deficit (OR: 1.13, IC 95%: 1.0 4-1.23). As predictors of Short L, Birth Weight 0.54 (0.44 -0.66) Gestacional Age 1.58 (1.22 -2.03) Male Gender 2.39 (1.26 -4.54) Combined Mobidity 3.09 (1.6 - 5.96) As predictors of low HC Birth Weight 0.62 (0.54 -0.83) Gestacional Age 1.58 (1.76-23.23)
Conclusions: In this population, associated morbidity (PDA, BPD and LOS), low birth weight, lower gestational age, male gender and caloric deficit explain EURG as well as low BL and HC at 40 weeks of PMA. We speculate that preventing postnatal undernourishment will only be possible with the implementation of new nutritional practices and other strategies intended to reduce co morbidities in this high risk population.