

# LOW WEIGHT GAIN AT THE 6<sup>TH</sup> WEEK OF LIFE AS A RISK FACTOR FOR RETINOPATHY OF PREMATURITY

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**Objectives:** The purpose of the present study is to analyze the low weight gain by the 6<sup>th</sup> week of life as an independent risk factor for the development of retinopathy of prematurity (ROP) at any of it's evolutive stage.

**Methods: Prospective cohort study** to compare the incidence of ROP and the perinatal low weight gain in all the newborn admitted at the Institution from October 2002 to December 2006. Were included all very low birth weight preterm babies (birth weight 1.500 g or lower or gestational age of 32 weeks or less). The main variable was the low weight gain by the 6<sup>th</sup> week of life. The low weight gain was defined as the weight measured by the 6<sup>th</sup> week of life less the birth weight. The clinical outcome was the development of ROP at any stage. The incidence of ROP was determined. Qui-Square test was used to compare the two groups of patients (babies with ROP and babies who did not develop the disease). The risk relative (incidence ratio) was calculated with 95% confidence interval (CI). To determine whether the weight gain, as defined, was related to the development of ROP independently to other associated factors, logistic regression was performed with significance level of 0.05%.

**Results:** Were included 348 infants. The overall incidence of ROP was 26.1%. The relative risk for the low weight gain was 7.40 (95% CI: 2.97–18.44), which represents a high risk for this variable to participate in the development of ROP.

**Conclusions:** The low weight gain measured by the 6<sup>th</sup> week of life was an important risk factor for ROP in any evolutive stage in our study. Ophthalmologists and neonatologists should take special care in the screening for ROP in this special group of patients. This is a very important conclusion, mainly for the middle-income countries once the low weight gain is a risk factor for ROP easily identifiable and also inexpensive for the social assistance in the developing countries like Brazil.

	Number (%)	Mean (SD)	Range	Median
Male gender in n (%)	149 (42.8%)			
Birth weight in grams		1196.0 (283.93)	505 - 2000	1217.5
Gestational age in weeks		30.3 (2.28)	24 - 37	30

SD: standard deviation

	Number of infants	Infants Non-ROP	Infants with ROP	Infants with ROP 3+
Low Weight Gain Group (33 <sup>th</sup> percentile) Perinatal weight gain < 520 grams	116	61	55	17
Intermediate Weight Gain Group (66 <sup>th</sup> percentile) Perinatal weight gain from 521 to 710 grams	116	87	29	1
High Weight Gain Group Perinatal weight gain > 710 grams	116	109	7	3
<b>Total</b>	<b>348</b>	<b>257</b>	<b>91</b>	<b>21</b>

ROP: retinopathy of prematurity; ROP 3+: severe ROP

	Relative risk *	95% Confidence Interval		p value
		Inferior	Superior	
Low Weight Gain Group (< 520 grams)	7.40	2.97	18.44	< 0.001
Intermediate Weight Gain Group (from 521 to 710 grams)	3.80	1.55	9.31	< 0.003
High Weight Gain Group (> 710 grams)	1			

\* Adjusted for Birth Weight, Gestational Age, Use of Oxygen-therapy in Mechanical Ventilation, use of entropoietin and intraventricular hemorrhage occurrence

Figure 1. Gaussian distribution of the 348 infants according the perinatal weight gain when they are separated by 100 grams interval of weight gain

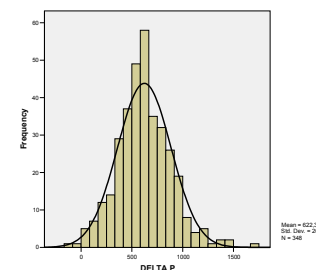


Figure 2. The mean weight gain among 257 Non-ROP infants was 678.77 grams (SD:258.59 grams) and among 91 ROP infants was 462.80 grams (SD:209.36 grams), p < 0.001.

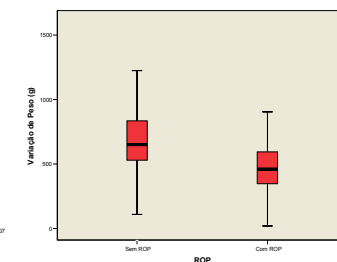


Table 3. Univariate analysis of the perinatal risk factors for ROP for the whole cohort of 348 infants

	Non-ROP infants 257	ROP infants 91	p value Chi-square
Birth Weight *	1253.4 ± 263,9	1053.3 ± 281,4	< 0.001 S
Gestational Age *	30.7 ± 2.1	29.1 ± 2.3	< 0.001 S
Use of oxygen in mechanical ventilation	124 (48.4%)	55 (60.4%)	0.049 S
Use of erythropoietin	195 (75.9%)	79 (86.8%)	0.028 S
Use of indomethacin	79 (30.7%)	39 (42.9%)	0.036 S
Intraventricular hemorrhage	35 (13.6%)	23 (25.3%)	0.010 S
Blood transfusions	107 (41.6%)	51(56.0%)	0.018 S
Use of surfactant	115 (44.7%)	51 (56.0%)	0.064 NS
Multiple gestation	39 (15.2%)	15 (16.5%)	0.767 NS
Sepsis	176 (68.5%)	69 (75.8%)	0.187 NS
Meningitis	22 (8.6%)	7 (7.7%)	0.797 NS
Male gender	116 (45.1%)	33 (36.3%)	0.142 NS
			p value Student t-test
Weight at the 6 <sup>th</sup> week of life *	1925.91 ± 434,27	1514,78 ± 418,85	< 0.001 S
<b>Weight gain *</b>	<b>678,77 ± 258,59</b>	<b>462,80 ± 209,36</b>	<b>&lt; 0.001 S</b>
5 minutes Apgar Index *	7.84 ± 1.86	7.65 ± 1.68	0.377 NS

\* Mean ± SD; S: significance; NS: non-significance

## THE PERINATAL LOW WEIGHT GAIN AND ROP IN THE INTERNATIONAL SCIENTIFIC LITERATURE

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