

Differences in leptin levels between newborns with and without Intrauterine Growth Restriction born in the Hospital Gineco Obstétrico "Isidro Ayora" of Quito-Ecuador. Year 2013-2014.



Acosta de la Vega M, Acosta Naranjo W, Pino Bendón M, Naranjo Estrella A.

Faculty of Medicine. Pontificia Universidad Católica del Ecuador. Quito-Ecuador

DISCLOSURE STATEMENT

The authors declare that no conflicts of interest exist.

OBJECTIVES

Establish the mean of leptin in the full term newborns born in the Hospital Gineco-Obstétrico "Isidro Ayora" and the influence of intrauterine growth restriction in this mean.

METHODS

Comparative cross-sectional study with 90 full term newborns randomly selected divided into two groups:

- Group A: 45 newborns without IUGR
- Group B: 45 newborns with IUGR.

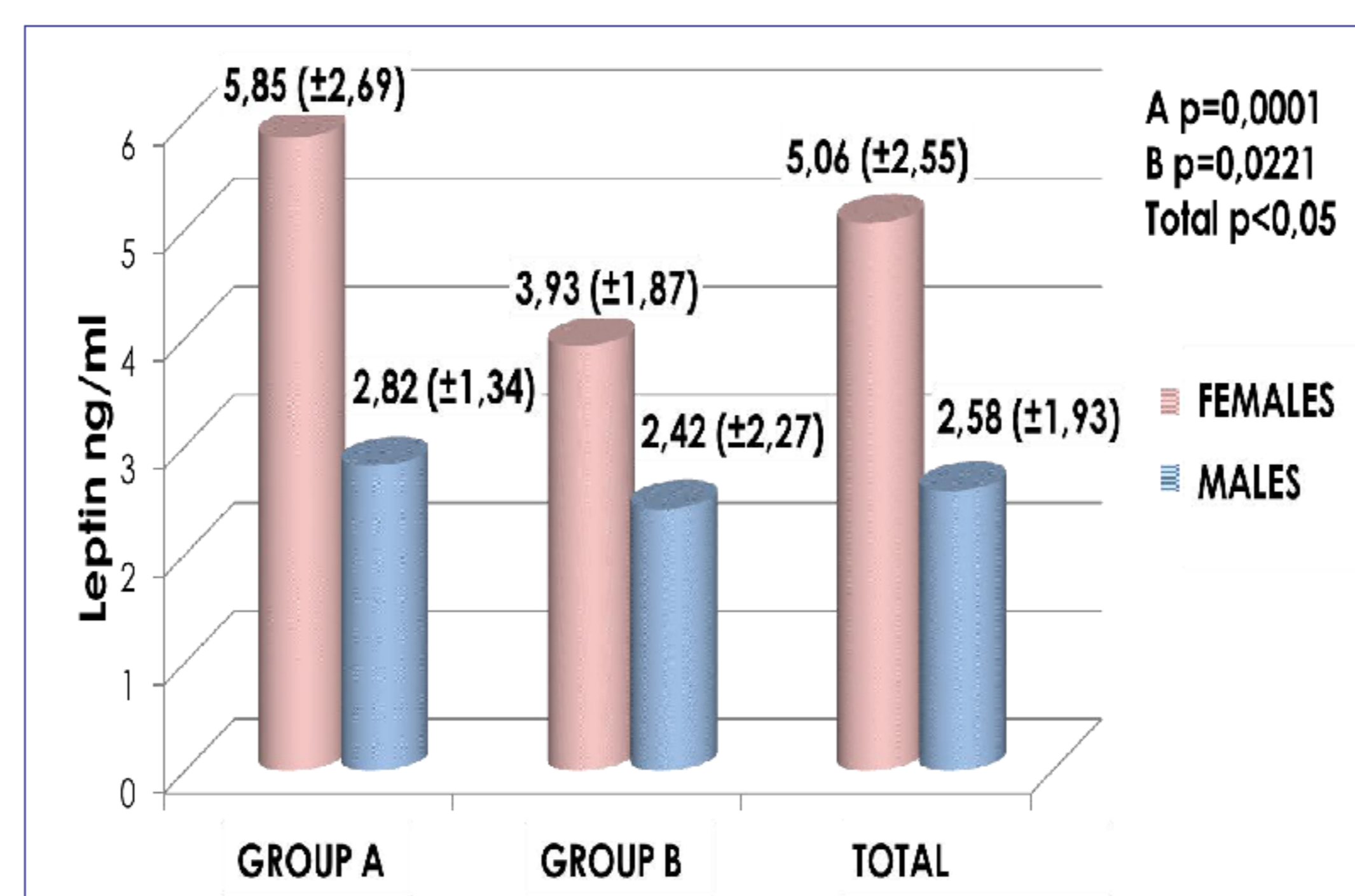
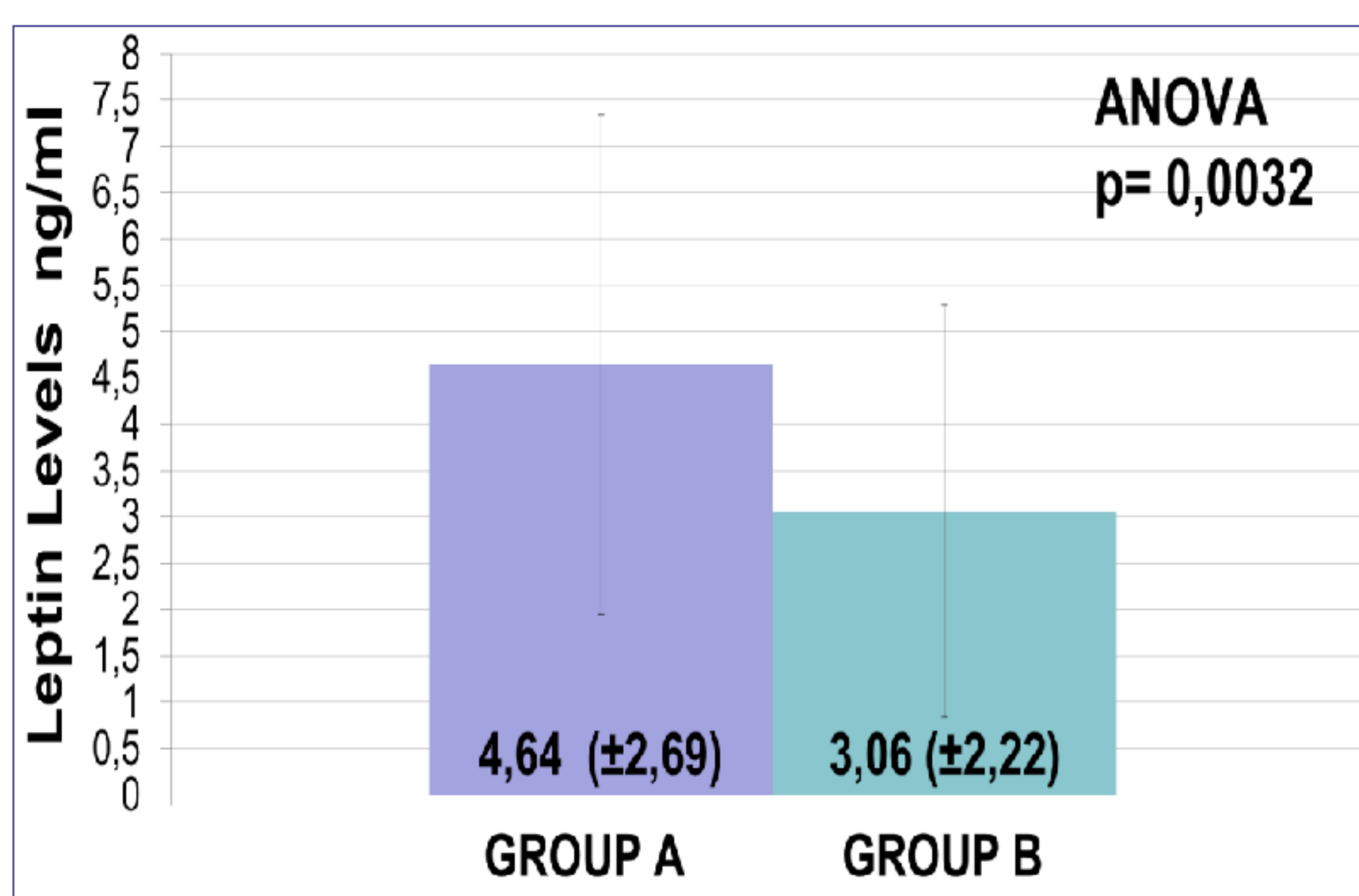
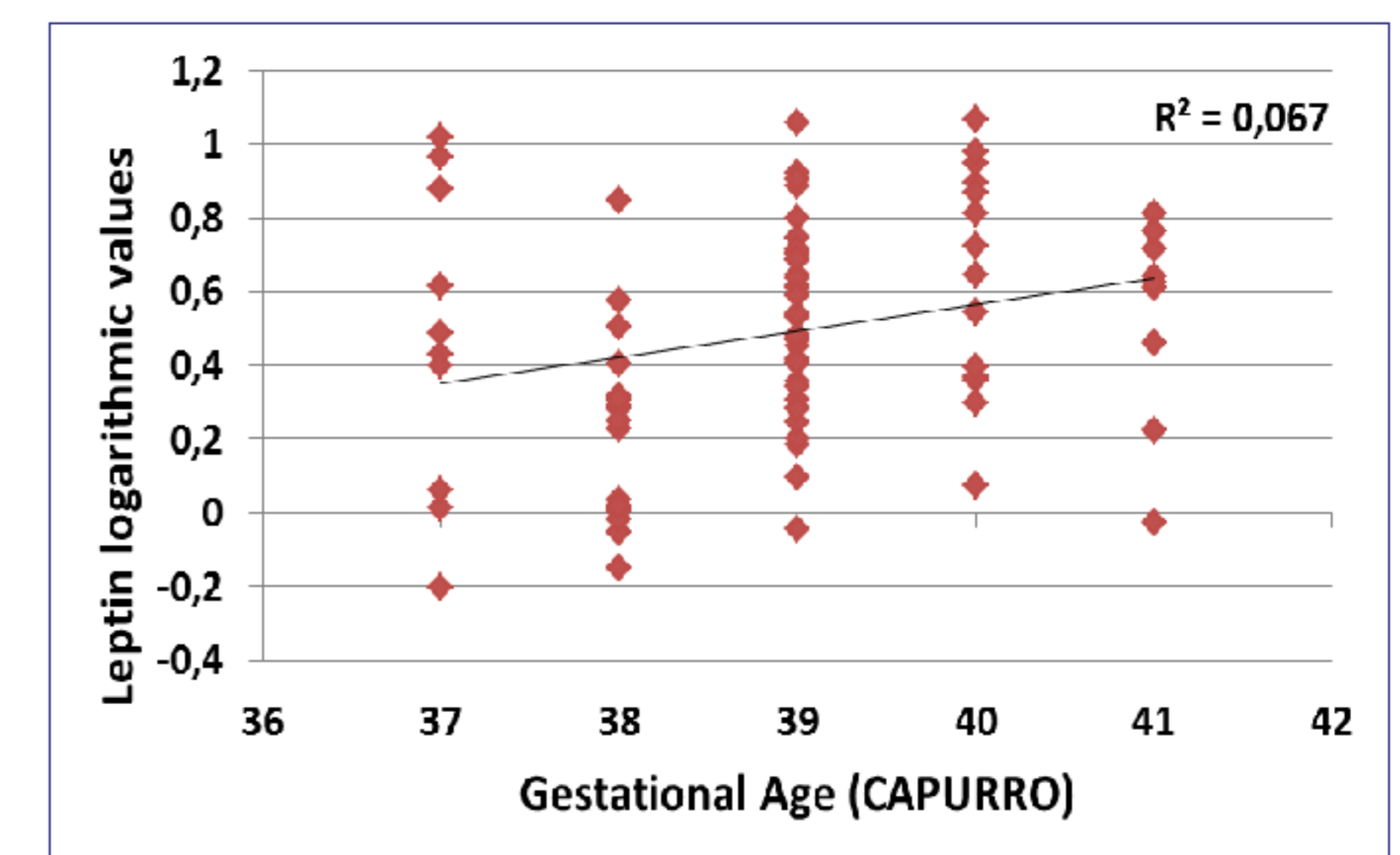
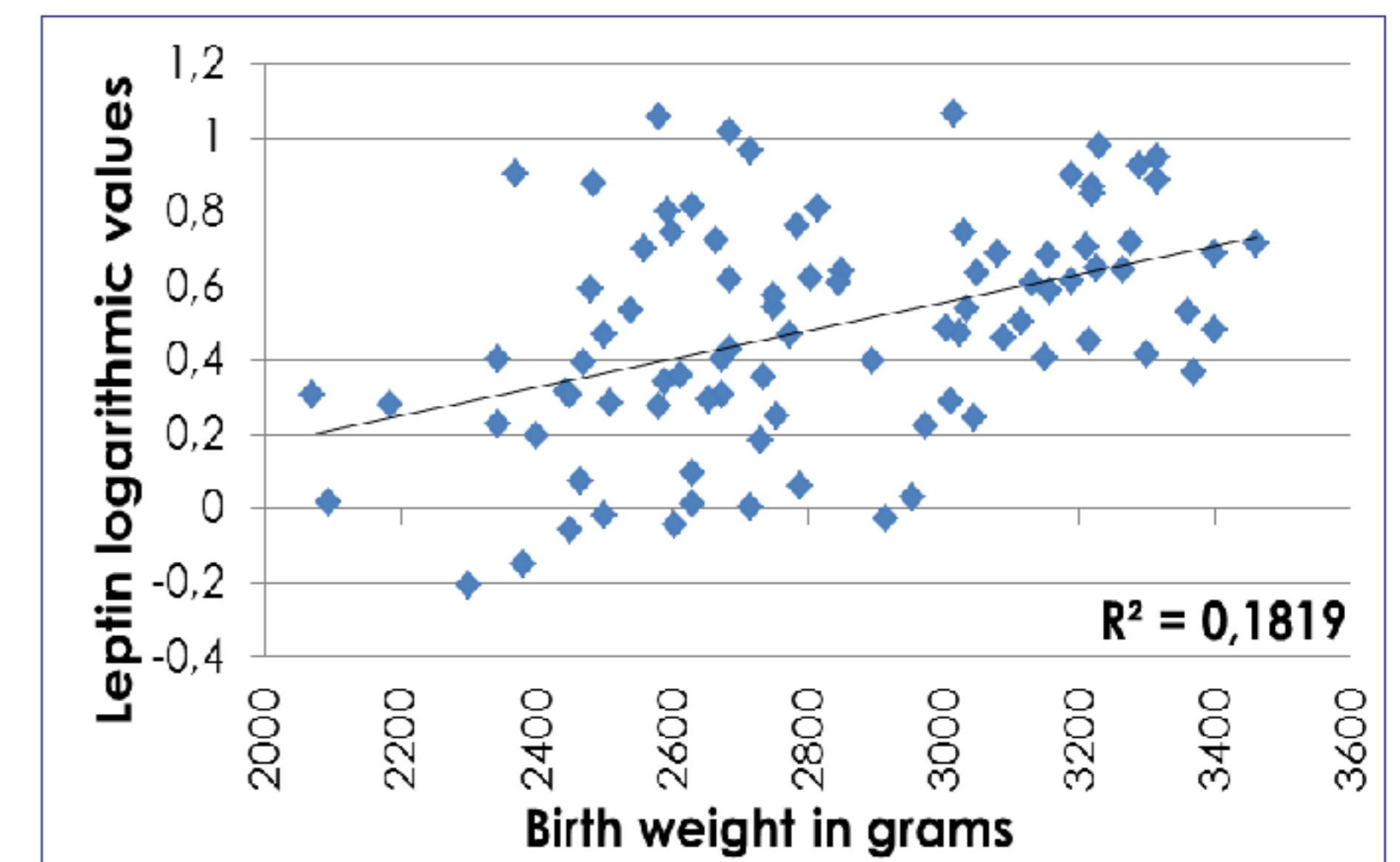
All the newborns met the following criteria: normal singleton delivery, with Hispanic parents, and a 5 minute APGAR score ≥ 7 .

Leptin concentrations were measured in cord blood with an ELISA method. Sensitivity: 0.5 ng/ml. Inter-assay precision CV<7%. Intra-assay precision: CV<5%.

Data analysis: Epi-Info version 7®. Quantitative variables: ANOVA Test and Kruskal-Wallis test. Qualitative variables: Chi square and Fisher exact value. For the correlation analysis the leptin values were transformed in their logarithmic form.

RESULTS

- There were no differences in the maternal characteristics (age, weight, height, gestational age, prenatal controls and parity).
- 51,1% of the newborns were male and 48,9% were female. There was no difference in gestational age and the anthropometric measures were lower in Group B.
- Serum leptin concentrations were significantly lower in IUGR newborns than in newborns without IUGR ($3,06 \pm 2,22$ ng/ml vs $4,64 \pm 2,69$ ng/ml; $p=0,0032$).
- Serum leptin concentrations were higher in females than in males ($5,06 \pm 2,55$ ng/ml vs $2,59 \pm 1,93$ ng/ml, $p<0,05$).
- Serum leptin levels were positively correlated with birth weight ($r^2=0,18$ $p<0,0001$), and gestational age ($r^2=0,08$ $p=0,013$).



Country	Leptin levels IUGR vs No IUGR (ng/ml)
France (Jaquet et al)	4,48 ± 6,7 vs 7,96 ± 8,3
Italy (Pighetti et al)	8,4 ± 4,8 vs 13,1 ± 3,4
Turkey (Yildiz et al)	3,53 ± 1,42 vs 5,58 ± 2,98
Colombia (Muñoz et al)	2,21 ± 1,79 vs 6,21 ± 4,03
Ecuador (Acosta et al)	3,06 ± 2,22 vs 4,64 ± 2,69

CONCLUSIONS

Lower serum leptin concentrations found in IUGR newborns will indicate that an alteration in the intrauterine environment will lead to a change in endocrine axes and will result in excessive weight gain, fat storage, and insulin resistance.

The levels found in these study are apparently lower in both groups compared to the levels found in Caucasian newborns what could imply an ethnic difference in Hispanics.

REFERENCES

1. Jaquet D, Leger J, Tabone D, Czernichow P, Levy-Marchal C. High serum leptin concentrations during catch-up growth of children born with intrauterine growth retardation. The Journal of Clinical Endocrinology & Metabolism. 1999; 84 (6): 1949-1953.
2. Pighetti M, Tommaselli G, D'Elia A, Di Carlo C, Mariano A, Di Carlo A, Nappi C. Maternal Serum and Umbilical Cord Blood Leptin Concentrations with Fetal Growth Restriction. The American College of Obstetricians and Gynecologists. 2003; 102(3): 535-543.
3. Yildiz L, Avci B, Ingeç M. Umbilical Cord and Maternal Blood Leptin Concentrations in Intrauterine Growth Retardation. Clinical Chemistry and Laboratory Medicine. 2005; 40(11):1114-1117.
4. Muñoz L, Sabogal J, Arteaga C, Hernandez R, Mockus I, Tovar J. Determinación perinatal de leptina en madres y neonatos con diagnóstico de retardo de crecimiento intrauterino (RCIU). NOVA - Publicación Científica. 2003;1(1):49-56.