

PAPPALYSINS AND STANNIOCALCINS IN PRENATAL AND POSTNATAL LIFE

A. Martín-Rivada^{1,2}, A. Campillo-Calatayud¹, S. Guerra-Cantera^{1,2}, M. Sánchez-Holgado³, G.A. Martos-Moreno^{1,2,4}, L. Soriano-Guillén^{2,5}, A. Pellicer^{2,3}, V. Barrios^{1,4}, J. Argente^{1,2,4,6}

1. Department of Pediatric Endocrinology. Hospital Infantil Universitario Niño Jesús. Instituto de Investigación La Princesa Madrid, Spain.
2. Department of Pediatrics. Universidad Autónoma de Madrid.
3. Department of Neonatology. Hospital Universitario La Paz. Madrid, Spain.
4. Centro de Investigación Biomédica en Red de Fisiopatología de la Obesidad y Nutrición (CIBEROBN), Instituto de Salud Carlos III.
5. Hospital Universitario Fundación Jiménez Díaz. Instituto de Investigación Fundación Jiménez Díaz, Madrid, Spain
6. IMDEA Institute. Madrid, Spain.

INTRODUCTION

- The human growth pattern varies from intrauterine to extrauterine life, with the GH-IGF axis being immature at birth and IGF-I assuming an important role in promoting postnatal growth.
- The actions of IGF-I are modulated by its interactions with IGFBPs, with this interaction being regulated by pappalysins (PAPP-A, PAPP-A2) and stanniocalcins (STC-1, STC-2), and thus modifying the amount of free IGF-I.

AIM

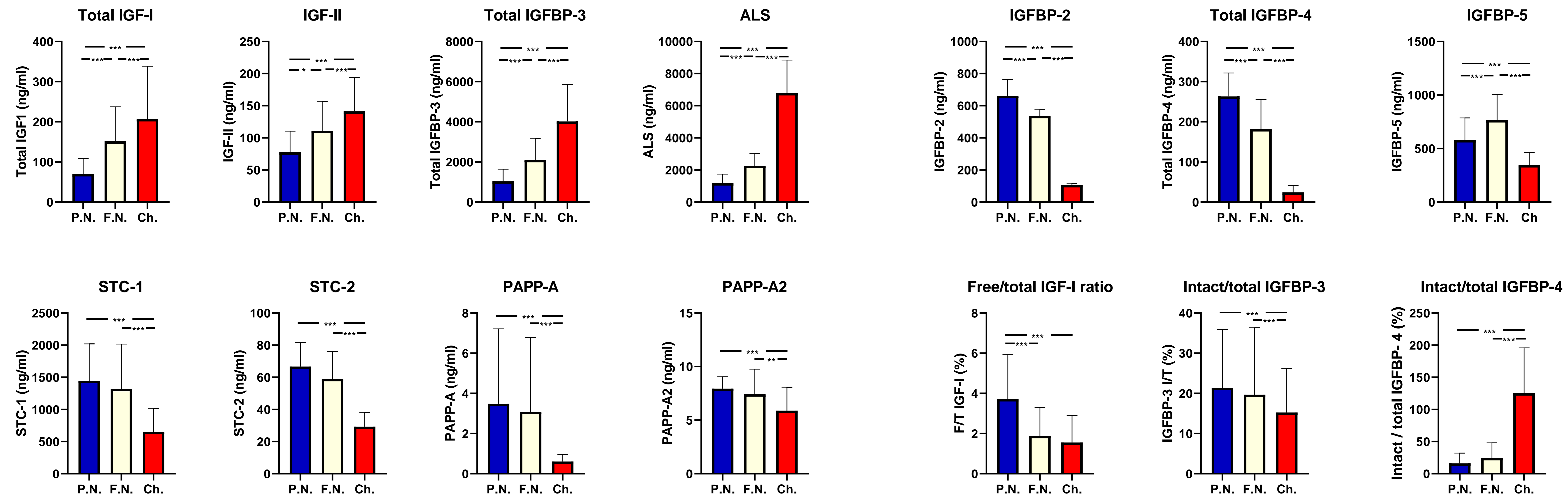
- To determine the circulating levels of PAPP-A, PAPP-A2, STC-1 and STC-2, together with the changes in the other GH-IGF axis parameters in newborns and healthy young prepubertal children.

PATIENTS AND METHODS

- Full-term newborns (F.T: n = 150; gestational age: 39.30 ± 1.10 weeks), 40 pre-term newborns (P.N: 30.87 ± 3.35 weeks) and 150 healthy prepubertal Spanish children (Ch: 4.05 ± 1.25 years) were enrolled in the study.
- All subjects presented normal weight and length/height according to the national references. Samples were obtained from cord blood in newborns and fasting serum samples in children.
- Total IGF-I, free IGF-I, IGF-II, IGFBP-2, total and intact IGFBP-3, total and intact IGFBP-4, IGFBP-5, ALS, insulin, PAPP-A, STC-1 and STC-2 were measured by ELISA and PAPP-A2 by CLIA.

RESULTS

- Serum concentrations of total IGF-I, IGF-II, total IGFBP-3 and ALS rose gradually according to gestational age and were significantly higher in children than in newborns.
- IGFBP-2, total IGFBP-4, total IGFBP-5, STC-1, STC-2, PAPP-A and PAPP-A2, followed an inverse pattern, being higher during the prenatal period.
- The free/total IGF-I ratio was higher in newborns, together with lower intact/total IGFBP-3 and -4 ratios.



Figures legend: Graphs show Mean ± Standard Deviation values. P.N: premature newborns, F.N: full-term newborns, Ch: children, ns: non-significant, *: p<0,05, **: p<0,01; ***: p<0,001.

CONCLUSIONS

- The relationship between the different members of the GH-IGF axis differs substantially from prenatal to early postnatal life, with a remarkable decrease in the bioavailability of IGFs in young children compared to prenatal life, with this possibly being related to the changes in pappalysin levels throughout development.
- However, the dynamics of this system during fetal life, and how prenatal growth is controlled remain to be elucidated.

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CONTACT INFORMATION

A. Martín-Rivada: amrivada@salud.madrid.org
J. Argente: jesus.argente@fundacionendo.org