MINIPUBERTY IN BORN SMALL FOR GESTATIONAL AGE INFANTS: A CASE CONTROL PROSPECTIVE PILOT STUDY

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INTRODUCTION

Minipuberty (MP) is still not well defined in small for gestational age (SGA) infants, due to controversial literature data.

AIM

The present study aims to evaluate **MP in SGA infants, both preterm and full-term,** compared with those born adequate for gestational age (AGA), during the first year of life.

METHODS

The study population included 33 SGA newborns (group A), 21 of which full-term (subgroup A1) and 12 preterm (subgroup A2). The control group (B) consisted of 27 AGA newborns, 17 of which full-term (subgroup B1) and 10 preterm (subgroup B2). All the participants were born in the same hospital and period. Sick newborns were excluded from the study. Periodic follow-up included growth parameters, FSH, LH, and Estradiol (E2) or Testosterone (T) serum levels at 3, 6 and 12 months.

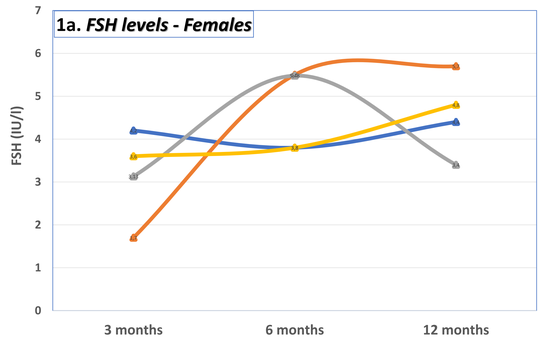
RESULTS

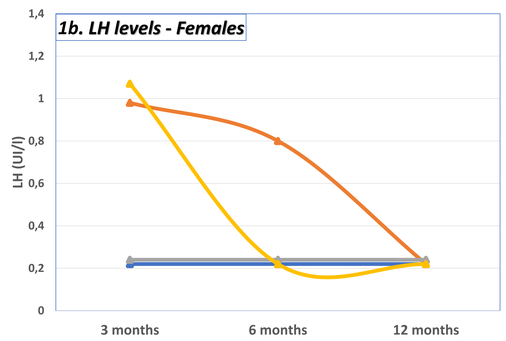
In the overall study population, the gonadotropin surge reached greater increase of LH in males at 3 months of age ($p<0.001$) and FSH in females at 3, 6 and 12 months ($p<0.001$), irrespectively of gestational age (GA). LH/FSH ratio remained higher in boys during the entire follow-up ($p<0.001$).

Among **the males**: 1)T at 3 months was higher in subgroup A2 vs A1($p=0.001$), and correlated negatively with GA, length and weight at birth ($p<0.05$); 2)LH was higher in subgroup B2 vs B1 at 6 months ($p=0.003$), and in group A vs B at 12 months ($p=0.03$); 3)LH/FSH ratio was increased in subgroup B2 vs B1 ($p=0.004$) at 6 months.

Among **the females**: 1)E2 levels at 6 months were higher in subgroup B2 vs B1 ($p<0.05$), and negatively correlated with GA ($p=0.015$) and weight gain ($p<0.05$); 2)LH at 6 months and LH/FSH ratio at 3 months were increased in subgroup A2 vs A1 ($p=0.03$).

Overall **preterm boys**, either SGA or AGA, displayed higher levels of T at 3 months ($p=0.001$) and LH at 3,6 and 12 months ($p<0.05$), together with increased LH/FSH ratio at 6 months ($p=0.001$). **Preterm girls**, either SGA or AGA, exhibited higher LH/FSH ratio at 3 and 6 months than full-term girls ($p<0.05$).





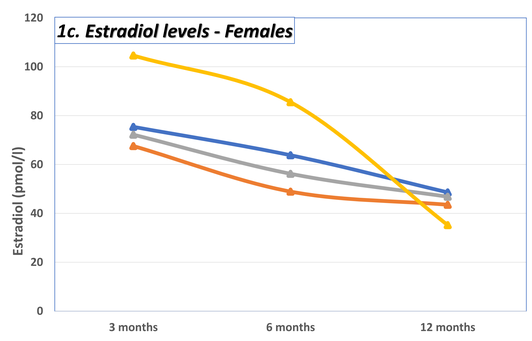
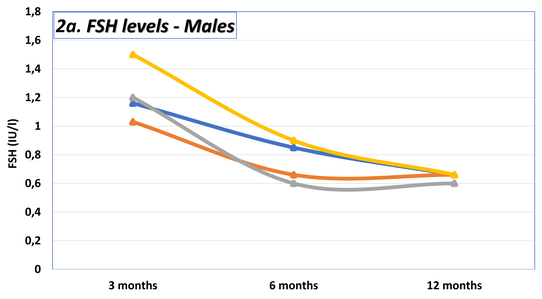
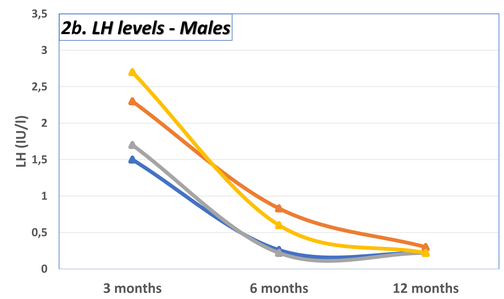


Figure 1a-1b-1c. *Median serum levels of LH (1a), FSH (1b) and Estradiol (1c) in females of each subgroup during 12 months follow-up.*





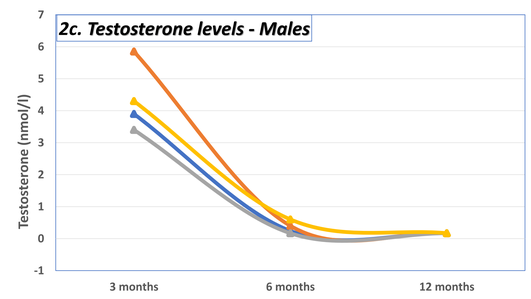


Figure 2a-2b-2c. *Median serum levels of LH (2a), FSH (2b) and Testosterone (2c) in males of each subgroup during 12 months follow-up.*

SGA fullterm (subgroup A1) | SGA preterm (subgroup A2) | AGA fullterm (subgroup B1) | AGA preterm (subgroup B2)

CONCLUSIONS

Irrespectively of GA, MP occurred with a **typical sexual dimorphism** and exhibited sex-specific correlations between hormones and perinatal parameters. The condition of SGA and prematurity seemed to enhance and protract MP over time in both sexes, suggesting that prenatal growth failure might influence hypothalamic-pituitary-gonadal axis activation.