

BONE AGE ADVANCEMENT IN PREPUBERTAL CHILDREN WITH PREMATURE ADRENARCHE



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OBJECTIVES

- 1) To characterize a population of prepubertal children with PA regarding birth weight, anthropometry, growth velocity, height difference, bone age, IGF1 and DHEAS
- 2) To compare IGF1, bone age, growth velocity and height difference in normal-BMI and overweight/obese PA children
- 3) To correlate bone age, DHEAS, BMI and IGF1 in this population

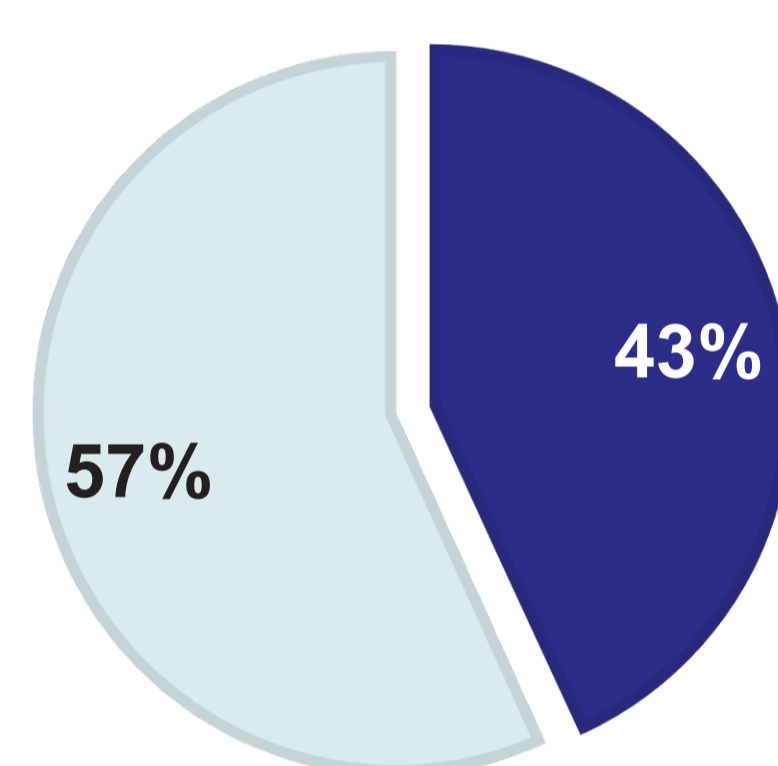
METHODS

- Cross-sectional study of 44 children with PA (37 girls and 7 boys)
- Data was collected from their healthy card regarding gestational age and birth weight
- Anthropometric evaluation and Tanner staging was performed by a trained observer. Weight, height and BMI were converted to SD (WHO growth charts). Growth velocity was converted to SD (Tanner height velocity charts). Bone age was evaluated by a trained endocrinologist (Greulich-Pyle)
- Target height was calculated from parents' height. Predicted height was assessed with the Bailey Pinneau method
- In all children, IGF1 (converted to SD according to age, gender and Tanner stage) and DHEAS were evaluated
- IGF1, bone age, growth velocity and height difference of normal-BMI PA children were compared to those of overweight/obese children, using independent samples t test
- The correlation between bone age advancement and DHEAS, BMI and IGF1 was performed using Pearson's correlation

RESULTS

Patients' characteristics (n=44)	
Females (n; %)	37 (84%)
Age (years) (mean; SD)	7.5±1.1
Birth weight SD (mean; SD)	- 0.285±1.1
Height SD (mean; SD)	0.96±0.93
Growth velocity SD (mean; SD)	1.4±1.8
Bone age advancement (years) (mean; SD)	1.1±1.1
DHEAS (µg/dL) (mean; SD)	121±58
IGF1 SD (mean; SD)	2±1.4

■ Normal BMI ■ Overweight/obese



	Normal BMI PA children (n=19)	Overweight/obese PA children (n=25)	p
DHEAS (µg/dL) (mean; SD)	101±58	140±53	0.026*
IGF1 (ng/mL) (mean; SD)	219±75	326±130	0.001*
Bone age advancement (years) (mean; SD)	0.7±0.5	1.4±1.4	0.044*

*Independent Samples T Test

Bone age advancement was correlated with DHEAS (r=0.449; p=0.05) and IGF1 (r=0.342; p=0.015), but not with BMI

CONCLUSIONS

Accordingly to previous knowledge, overweight and obese children present high levels of DHEAS, IGF1 and advanced bone age. In this particular group of PA children, there is an adrenal hyperfunction (higher levels of DHEAS) that seems to be more expressive in overweight and obese children and possibly contributes to a more rapid skeletal maturation.

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