Premature adrenarche and metabolic risk: differences by gender

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I. BACKGROUND

Premature adrenarche (PA) is defined biochemically by increased levels of DHEA and DHEAS before the age of 8 yr in girls and 9 yrs in boys and clinically recognized by the presence of signs of androgen action including adult-type body odour, oily skin and axillary and pubic hair growth.

This is traditionally indicated by a DHEA-S level within normal limits for early puberty ~ 40 µg/dl (above average for 6 to 8 yr).

Early infancy weight gain has been also associated with increased metabolic risk, earlier puberty, and premature adrenarche (PA).

PA has been considered a benign condition until recently, where association to increased metabolic risk has arisen.

This risk may depend on ethnic background and infancy weight gain, which could be different by gender.

II. AIM

To determine whether PA in children at pubertal onset (TII) determines a higher metabolic profile

III. SUBJECTS AND METHODS

“A longitudinal Chilean cohort (~ 20% indigenous/Mapuche origin) the Growth and Obesity Cohort Study (GODCS, n=1052, 49.1TF)” followed from 2006 (born in 2002, PA defined by DHEAS (RIA) > 75th percentile for each gender (45.1 M, 42.0 F)) and measured at mean age 8.8 ± 0.56 yr (Corvalán, AJCN 2013,77:218-25).

In these children we performed annual clinical examination including Tanner staging together with body composition (skinfolds and bioimpedanciometry) skeletal maturation. Bone age measurements were obtained from the left hand by using an ultrasound method (BonAge; Sunlight Co).

TII was defined by telarche in girls and testicular volume >3cc in boys.

At – age 7 y we measured serum DHEAS (RIA, DSL, Webster, TX, CVintra3.5% and Cvinter 5.1%), IGF-I, insulin and leptin

PA+ IGF-I concentration (locally developed RIA requiring sample extraction as a first step (sensitivity: 5 ng/ml; CVintra>10.2, CVinter=2.4; Insulin (RIA, Siemens Medical Solutions Diagnostics, Sens=0.5 ng/ml, CVintra<5.5, CVinter=8.2; Leptin (RIA, Millipore; Sens=0.1 ng/ml, CVintra<3.8, CVinter<4.7), glucose ( GOD-PAP ), adiponectin (RIA; Sens=0.1 ng/ml, CVintra<3.8 CVinter<4.7 ), and lipid profile (TG, HDL, LDL, total cholesterol) by dry analytic methodology (N�킝, Johnson & Johnson, Inc.)

Statistics: multiple regression lineal models were used to assess the relation between PA and anthropometric and metabolic profile at TII, adjusting by chronologic age at DHEAS sampling and body mass index (BMI). A survival analysis was used to estimate median age of Tanner attainment.

IV. RESULTS

Results in tables are presented as mean ± SD

V. CONCLUSIONS

Children with PA were taller and had higher BMI; boys had higher leptin levels and girls higher IGF-I, but not to a disadvantageous metabolic profile at this early puberty. Follow-up of this cohort is necessary to address prospectively the interrelationships of Premature adrenarche, early growth and adiposity as markers of metabolic risk

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