Clinical criteria remain paramount for the diagnosis of polycystic ovary syndrome in the adolescent age group

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Introduction

Adolescent polycystic ovary syndrome (PCOS) may be difficult to distinguish from pubertal changes and diagnosis remains a challenge. Identifying girls at risk for PCOS and implementing treatment early in the development of PCOS may be an effective means of preventing some of the long-term co-morbidities such as the metabolic syndrome and infertility.

Aim

- To investigate the value of different biochemical parameters for the diagnosis of PCOS in adolescents.
- To assess the prevalence of non-classical congenital adrenal hyperplasia (NCCAH) among adolescent girls referred for clinical symptoms suggesting PCOS.

Method and Subjects

- **Design** A retrospective, cross-sectional study at a tertiary pediatric endocrinology unit.
- **Study cohort** 114 girls aged 13-18 with a clinical presentation suggesting PCOS who underwent GnRH and ACTH stimulation tests.
- Clinical and laboratory characteristics of girls diagnosed with PCOS (based on Rotterdam criteria) were compared to those of girls having "isolated" hyperandrogenism or menstrual irregularities ("non-PCOS").

Results

- 9 of 114 girls (7.9%) were diagnosed with NCCAH, 87 with PCOS (53 met all 3 Rotterdam criteria), 18 were non-PCOS.
- **Hormonal profile** - Androstenedione, basal LH and basal LH/FSH ratio were significantly higher in girls with PCOS, but overlap between groups was observed.
- **Clinical presentation** - girls with PCOS had a significantly higher prevalence of hirsutism, PCO morphology by ultrasonography, and menstrual irregularities.
- Comparisons of only PCOS girls who met all 3 Rotterdam criteria (n=53) to the non-PCOS group, yielded similar results.
- Using stepwise logistic regression, the only predictive factor for PCOS was the basal LH/FSH ratio, with insufficient sensitivity and specificity.

	PCOS (n=87)	Non -PCOS (n=18)	P value
Clinical features			
Age at first evaluation (y)	15.3±1.3	15.9±1.6	0.08
Mean systolic blood pressure	114±10	118±13	0.26
Mean diastolic blood pressure	67.2±8.9	70.9±10.0	0.16
Birth weight (Kg)	3.04±0.55	3.48±0.37	0.06
Anthropometric measurements			
Height SDS	-0.22±0.1	-0.13±1.18	0.71
Weight SDS	0.53±1.08	0.84±1.31	0.28
BMI SDS	0.66±1.05	0.91±1.26	0.38
Hormonal profile			
DHEA-S (µmol/l)	5.82±3.14 (0.8-17.4)	4.99±2.81 (0.5-8.8)	0.33
Androstendione (nmol/l)	7.46±2.99 (2.5-15.1)	5.43±2.24 (2.6-9.9)	0.009
Testosterone (nmol/l)	1.38±0.81 (0.3-5.0)	1.10±0.73 (0.3-2.7)	0.18
Basal 17-OHP (nmol/l)	2.62±1.50	2.93±1.50	0.45
Stimulated 17-OHP (nmol/l)	8.11±3.34	8.67±2.99	0.54
Basal LH (IU/L)	7.36±4.62 (0.6-18.5)	4.38±3.08 (0.4-14.3)	0.01
Basal FSH (IU/L)	5.49±1.90 (1.0-11.4)	5.64±2.35 (1.1-9.5)	0.77
Basal LH/FSH ratio	1.34±0.71 (0.2-3.3)	0.78±0.40 (0.3-1.8)	0.001
Peak LH (IU/L)	50.6±40.9 (9.4-200)	33.7±26.4 (4.7-95.5)	0.13
Peak FSH (IU/L)	10.4±4.4 (3.8-25.0)	10.1±4.3 (4.9-20.5)	0.86
Peak LH/FSH ratio	4.7±2.9 (0.8-20.6)	3.7±3.3 (0.4-14.1)	0.22
Prolactin (ng/ml)	10.45±5.71	8.48±4.37	0.22
Fasting glucose (mg/dL)	82.4±9.7	83.9±6.0	0.56
Total cholesterol (mg/dL)	157.0±27.7	161.9±17.2	0.55
Triglycerides (mg/dL)	84.2±39.9	87.6±33.0	0.77
LDL (mg/dL)	87.7±22.9	97.8±16.7	0.16
HDL (mg/dL)	52.2±14.1	48.7±12.4	0.44
Clinical presentation			
Hirsutism	72 (85.7%)	9 (52.9%)	0.001
Menstrual irregularity	82 (95.3%)	10 (55.6%)	<0.001
PCO morphology - sonography	57 (73.1%)	0 (0%)	<0.001

Conclusions

- While an increased basal LH and basal LH/FSH ratio may support the diagnosis of PCOS in adolescents, the GnRH stimulation test is not contributory.
- Given the significant prevalence of NCCAH among adolescents presenting as PCOS, an ACTH test should be included in the work-up, at least in populations with higher prevalence.
- Since no one parameter is diagnostic for PCOS, clinical criteria remain paramount.

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