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Laboratory and etiology characteristics of PCOS phenotypes

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Context: Polycystic ovarian syndrome (PCOS) is a multifactorial disorder with a wide spectrum of clinical symptoms, endocrine and metabolic changes. The Rotterdam diagnostic criteria should include two of the three criteria: chronic anovulation (A), clinical or biologic hyperandrogenism (HA), and polycystic ovarian morphology on ultrasound (PCOM). It has four phenotypes: A: HA+A+PCOM, B: HA+A, C: HA+PCOM, D: A+PCOM.

Objective: To make a comparative analysis of the clinical and laboratory features of Rotterdam classified phenotypes of PCOS women to determine the presenting etiology factor.

Methods: Retrospective analysis of PCOS patients in a Gyn Endocrinology Outpatient Unit, a tertiary referral university medical centre. Patients: Data of 100 PCOS patients were analysed and 30 healthy women served as controls. Interventions, main outcome measures: Age, menarche, cycle regularity, ovulation frequency, androgen symptoms, PCOM and BMI were examined. Laboratory measures were FSH, LH, LH/FSH ratio, Testosterone (T), Androstendione (And), SHBG, DHEAS and 17-OHP. Insulin resistence (IR) were diagnosed by standard oral glucose tolerance test with detection of serum glucose and insulin.

Results: 100 PCOS patients according to phenotypes: A: N=53: (25,7±5 years) [mean age ± SE], B: N=24 (24,8±8), C: N=6 (23,7±3,7), D: N=17 (27,2±6,5). There was no difference between the phenotypes regarding the time of menarche, regular cycles were only in patients with C phenotype. 94% of A, 79% of B, 50% of C phenotype had HA, women with D phenotype didn't have such symptoms. BMI was elevated in all groups, mostly in phenotype A and D. FSH level was normal, but LH was considerably higher in type A and D, as well as LH/FSH ratio (1,86 and 1,72). The highest ovarian androgen levels (T, And) were detected in type A group, the most increased adrenal derived androgen (DHEAS, 17OHP) level was measured in type A and C. IR was the most common in type D (47%), less frequent in type C (17%).

Conclusions: If there is no PCOM (B), then hirsutism is associated with ovarian androgen excess and low SHBG, but not with IR, which suggests ovarian derived HA. If there are ovulations despite PCOM (C), the relatively lower BMI and IR ratio, and high DHEAS, 17OHP levels suggest the adrenal cortex's pathological role. In PCOS without HA (D) BMI is high and IR is common, this phenotype is based on the etiology of obesity. The severe (A) phenotype PCOS develops, if there are more factors occur together.

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