

BIRTH WEIGHT IS ASSOCIATED WITH SIGNIFICANT CLINICAL AND BIOCHEMICAL PARAMETERS OF PCOS

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Introduction: Several studies have demonstrated an association of birth weight with metabolic and reproductive abnormalities in adults. The aim of this study was to investigate the birth weight in women with PCOS and its correlation with other important clinical and biochemical characteristics of the syndrome.

Patients & Methods: We studied 288 women with PCOS according to the NIH criteria (1990) and 166 women with normal cycles and without clinical hyperandrogenism. Birth Weight, levels of androgens, insulin and fasting glucose were recorded.

Results:

◆ Patients and controls were matched for age and Body Mass Index (BMI). Women with PCOS had statistically significant increased central obesity and insulin resistance. They also had increased levels of all androgens (Total Testosterone, Δ4A, and DHEAS) and reduced levels of SHBG.

◆ Information on birth weight was available for 224/288 women with PCOS and 75/166 controls.

◆ No differences were found ($p > 0.05$) in birth weight between women with PCOS (3.228 ± 530 gr) and normal controls (3.160 ± 503 gr).

◆ In women with PCOS, birth weight was negatively correlated with the levels of DHEAS and positively correlated with waist circumference and BMI.

Patients	Birth Weight (gr)
BMI (kg/m ²)	p = 0.04 r = 0.136
Waist Circumference (cm)	p < 0.001 r = 0.312
HOMA-IR	ns
TTesto (ng/ml)	ns
Δ4A (ng/ml)	ns
DHEAS (μg/dl)	p = 0.04 r = - 0.137
SHBG (nmol/l)	ns

◆ In controls, birth weight was negatively correlated with the levels of SHBG.

Controls	Birth Weight (gr)
BMI (kg/m ²)	ns
Weight Circumference (cm)	ns
HOMA-IR	ns
TTesto (ng/ml)	ns
Δ4A (ng/ml)	ns
DHEAS (μg/dl)	ns
SHBG (nmol/l)	p = 0.026 r = - 0.263

◆ Then, we divided women from both two groups in 6 categories according to birth weight. We observed no statistically significant differences in the distribution percentages among those with PCOS and normal controls.

	PCOS Patients (n=288)	Controls (n=166)	p value
Age(years)	24.9 ± 6.1	26 ± 6.4	ns
BMI (kg/m ²)	27.9 ± 7.3	27 ± 7.6	ns
Waist Circumference (cm)	89.9 ± 18	82.9 ± 16.8	< 0.001
HOMA-IR	2.8 ± 2.1	2.2 ± 1.5	< 0.001
TTesto (ng/ml)	0.92 ± 0.44	0.42 ± 0.14	< 0.001
Δ4A (ng/ml)	3.5 ± 1.3	1.8 ± 0.5	< 0.001
DHEAS (μg/dl)	296.2 ± 122.8	219.6 ± 87.8	< 0.001
SHBG (nmol/l)	31.5 ± 13.2	52.3 ± 21.7	< 0.001
Birth Weight (gr)	3228 ± 530 (*n=224)	3160 ± 503 (*n=75)	ns

Birth Weight	Patients (*n=224/288)	Controls (*n=75/166)	p value
< 2.500 gr	8 %	12 %	ns
2.501 - 3.000 gr	27.8 %	22.7 %	ns
3.001 - 3.500 gr	38.4 %	40 %	ns
3.501 - 4.000 gr	21.4 %	25.3 %	ns
4.001 - 4.500 gr	4.5 %	0 %	ns
> 4.500 gr	0.9 %	0 %	ns

Conclusions: We did not find any differences in birth weight between women with PCOS and normal controls. However, birth weight was associated with significant clinical and biochemical parameters of PCOS, including obesity and hyperandrogenism.