DOES FINASTERIDE, AS WELL AS METFORMIN, IMPROVE INSULIN RESISTANCE IN PCOS?

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OBJECTIVES

The effects of finasteride on insulin resistance and of metformin on hyperandrogenism in patients with polycystic ovary syndrome (PCOS) are not clear. This study therefore compared the effects of finasteride, metformin, and finasteride plus metformin treatments on hormone levels, insulin resistance, and hirsutism score in women with PCOS.

METHODS

Fifty-two patients with PCOS were randomly assigned to receive finasteride 5 mg/day, metformin 1700 mg/day or finasteride plus metformin for 12 months. Body mass index (BMI), Ferriman Gallway score (FGS), serum concentrations of estradiol, sex hormone-binding globulin, free testosterone, dehydroepiandrosterone sulfate (DHEAS), androstenedione, and homeostasis model assessment of insulin resistance (HOMA-IR) index and areas under the curve (AUC) for insulin and glucose were evaluated before and after 12 months of treatment.

Table-1: Baseline and 12 month endocrine profiles and comparisons within and between the patient groups.

	Normal Values	Months	Group-1 (finasteride)	Group-2 (metformin)	Group-3 (combination)
BMI (kg/m^2)	18.5-25	0.	27.4 ± 4.3	27.1 ± 4.3	27.6 ± 4.2
		12.	26.7 ± 2.2	26.9 ± 4.2	26.6 ± 4.4
FGS	0-7	0.	17.3 ± 5.1	16.0 ± 4.9[a]	19.2 ± 5.0[a]
		12.	11.7 ± 5.2*	11.1 ± 5.0*	12.1 ± 5.5*
E2 (pg/ml)	11-69	0.	82.6 ± 63.2[b]	50.8 ± 29.4[b]	65.8 ±34.4[b]
		12.	90.2 ± 35.0[b]	56.9 ± 39.5[b]	80.9 ± 59.5[b]
SHBG (nmol/ml)	12-155	0.	33.1 ± 20.1	27.4 ± 13.6[c]	33.0 ± 21.3
		12.	40.9 ± 20.0	29.4 ± 13.7[c]	41.9 ± 20.2*
Free T (pg/ml)	0.3-3.2	0.	2.4 ± 0.6[d]	2.8 ± 1.4	3.1 ± 1.8[d]
		12.	2.1 ± 0.5*	2.4 ± 1.1*	2.0 ± 1.2*
DHEAS (ng/ml)	1950-5070	0.	3458 ± 1535	3846 ± 2060	3325 ± 2234
		12.	2421 ± 1098*	3090 ± 1199*[c]	2619 ± 1081*
A (ng/ml)	0.1-3.0	0.	3.8 ± 1.4	3.7 ± 1.3	4.0 ± 2.5
		12.	2.6 ± 0.6*	2.3 ± 0.7*	2.5 ± 0.6*

*: p <0.05 compared with before treatment in the same group; [a]: p <0.05 when group-2 compared to group-3; [b]: p <0.05 in comparisons between groups; [c]: p <0.05 when group-2 compared to other groups; [d]: p <0.05 between the groups 1 and 3.

Table-2: Insulin resistance parameters at baseline and after 12 months of treatment, and comparisons within and between patient groups.

	Months	Group-1 (finasteride)	Group-2 (metformin)	Group-3 (combination)
HOMA-IR	0.	2.6 ± 0.6	3.5 ± 3.5[a]	2.3 ± 1.7
	12.	1.2 ± 0.7*[b]	1.4 ± 1.3*	1.6 ± 1.2*[b]
AUC-Glucose	0.	13098 ± 2895[b]	15018 ± 5023	15939 ± 5195[b]
	12.	12124 ± 1568*	11961 ± 3542*	13606 ± 3522*[c]
AUC-Insulin	0.	5356 ± 4101	7203 ± 5044[a]	5087 ± 2145
	12.	1689 ± 1652*[d]	4109 ± 3213*	3039 ± 1928*

*: p <0.05 compared with before treatment in the same group; [a]: p <0.05 when the group-2 compared to the other two groups; [b]: p <0.05 when the group-3 compared to the group-1; [c] p <0.05 when the group-3 compared to the other two groups; [d]: p <0.05 when the group-1 compared to the other two groups.

RESULTS

Reductions in FGS, free testosterone, DHEAS, androstenedione, HOMA-IR, AUC-insulin, and AUC-glucose were significant within each group, whereas BMI and estradiol did not. Comparisons of changes in parameters in the three groups did not clearly show the superiority of any treatment modality (Table-1 and -2).

CONCLUSIONS

Insulin resistance and hyperandrogenism are the two major interacting pathophysiological derangements in PCOS. Thus, treatment with finasteride alone should significantly reduce both androgen levels and parameters of insulin resistance; and our results confirmed that suggestion. To our knowledge, this study is the first to show that finasteride improves insulin resistance in PCOS. In addition, metformin alone was effective, and not inferior to finasteride, in the treatment of hyperandrogenism. The finasteride, metformin, and their combination therapies were effective and safe in women with PCOS, since both drug classes have beneficial effects on both hyperandrogenism and insulin resistance.

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