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Efficacy Of Cyproterone Acetate And Drosperinone Containing Cocps In Treatment Of Hirsutism In Patients With PCOS

Nazish Sarfraz[1], Humera Akram[2], Afroza Abbas[3], Sadaf Shaheen[4], Rida Zafar[5], Eesha Yaqoob[6]

Abstract

Introduction: Hirsutism is a condition characterized by excess hair growth on the face, chest, and/or back in women and it is often caused by an imbalance of hormones, such as androgens. OCPs prove to be effective in reducing hirsutism in patients with PCOS by inhibiting the production of androgens and decreasing the activity of androgen receptors. OCPs may have additional benefits for patients with PCOS, such as regulating menstrual cycles, improving fertility, and reducing the risk of endometrial cancer. However, OCPs may not be suitable for all women with PCOS.
Methods: The study was conducted to investigate the effectiveness of these OCPs in reducing hirsutism in PCOS patients. In the study, 80 participants were included, 40 in the intervention group and 40 in the control group. The intervention group received a combination oral contraceptive pill containing cyproterone acetate and drosperinone (COCP) for a period of 6 months, while the control group received a placebo. Hirsutism was assessed at baseline and at the end of the 6-month treatment period using the Ferriman-Gallwey score. The primary outcome measure was the change in Ferriman-Gallwey score from baseline to the end of the treatment period.
Results: The mean age of participants was 27.4 years (SD ±5.3) and the majority had a BMI of 25.3 kg/m² (SD±4.5). The intervention group showed a significant reduction in the Ferriman-Gallwey score (-5.2, 95% CI -6.5 to -3.8), while the control group had a non-significant change (-1.9, 95% CI -3.3 to -0.5). Hormone levels showed changes. Patient satisfaction was high in the intervention group (90%). Statistical analysis revealed a significant difference in the Ferriman-Gallwey score ($p < 0.05$). The combination oral contraceptive pill effectively reduces hirsutism in PCOS patients.
Conclusion: Our study demonstrates the significant reduction in hirsutism and high patient satisfaction with the COCP, highlighting its potential as a first-line treatment for women with PCOS, leading to improved well-being and quality of life.
Keywords: Hirsutism, Combined Oral Contraceptive Pill, Cyproterone Acetate, Drospirenone

[1] Post Graduate Trainee, Sargodha Medical College; [2] HOD, Sargodha Medical College; [3] Associate Professor, Sargodha Medical College; [4,5] RMO, Sargodha Medical College; [6] Assistant Professor, Health Services Academy.
Correspondence: Dr Eesha Yaqoob, Assistant Professor of Health Services Academy. **Email:** eesha@hsa.edu.pk
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1. Introduction

Cyproterone acetate and drosperinone are two synthetic progestin hormones that are commonly used in combination with an estrogen hormone in oral contraceptive pills (OCPs) to treat hirsutism in patients with polycystic ovary syndrome (PCOS).[4,7] Hirsutism is a condition characterized by excess hair growth on the face, chest, and/or back in women. It is often caused by an imbalance of hormones, such as androgens (male hormones), which can lead to excessive hair growth and other symptoms of PCOS.[8] OCPs containing cyproterone acetate and drosperinone are effective in reducing hirsutism in patients with PCOS. These OCPs work by inhibiting the production of androgens and decreasing the activity of androgen receptors, leading to a reduction in hirsutism and other symptoms of PCOS.[6]

In a study published in the Journal of the American Academy of Dermatology, OCPs containing cyproterone acetate and drosperinone were found to be effective in reducing hirsutism in patients with PCOS. The study included 124 women with PCOS and hirsutism who were treated with OCPs containing either cyproterone acetate or drosperinone. After six months of treatment, the women in the cyproterone acetate group had a significant reduction in hirsutism, while the women in the drospirenone group had a slightly less but still significant reduction in hirsutism.[1, 4]

Another study also found that OCPs containing cyproterone acetate and drosperinone were effective in reducing hirsutism in patients with PCOS. In this study, OCPs containing cyproterone acetate and drosperinone were compared to OCPs containing levonorgestrel, another progestin hormone. The study found that OCPs containing cyproterone acetate and

drosperinone were more effective in reducing hirsutism in patients with PCOS compared to OCPs containing levonorgestrel.[2, 3, 4, 5]

In addition to reducing hirsutism, OCPs containing cyproterone acetate and drosperinone may also have other benefits for patients with PCOS. These OCPs may help to regulate menstrual cycles, improve fertility, and reduce the risk of endometrial cancer. OCPs containing cyproterone acetate and drosperinone are effective in reducing hirsutism in patients with PCOS.[4, 9] These OCPs work by inhibiting the production of androgens and decreasing the activity of androgen receptors, leading to a reduction in hirsutism and other symptoms of PCOS.

The rationale for conducting this study was to evaluate the efficacy of oral contraceptive pills (OCPs) containing cyproterone acetate and drosperinone in reducing hirsutism in patients with polycystic ovary syndrome (PCOS). However, there is a need to compare the efficacy of these OCPs against other progestin-containing OCPs and assess their potential benefits beyond hirsutism reduction, such as menstrual cycle regulation, fertility improvement, and endometrial cancer risk reduction. The study aims to contribute to the existing knowledge and inform clinical decision-making in the treatment of hirsutism in PCOS patients.

2. Materials & Methods

The study was a prospective, randomized, controlled clinical trial conducted at a tertiary care hospital. The study population consisted of women with a diagnosis of PCOS and hirsutism, as determined by the Rotterdam criteria. Exclusion criteria included. To control confounders, several measures were implemented in this study. These included excluding participants with conditions or medications that could affect hormone levels, pregnancy, lactation, use of medications that could affect hormone levels, and history of liver disease or cancer, ensuring randomization of participants to minimize selection bias, and carefully matching the intervention and control groups based on demographic factors such as age, ethnicity, and BMI. These measures aimed to minimize the influence of potential confounders on the study outcomes.

A total of 80 participants were included in the study. The participants were randomly assigned to either the intervention group or the control group using a simple random sampling method. With 40 in the intervention group and 40 in the control group. The intervention group received a combination oral contraceptive pill containing cyproterone acetate and drosperinone (COCP) for a period of 6 months, while the control group received a placebo.

Using the Ferriman-Gallwey score, hirsutism was evaluated at baseline and at the conclusion of the six-month therapy period. In order to assess the levels of other hormones, such as testosterone, luteinizing hormone, and follicle-stimulating hormone, blood samples were also taken at the beginning and conclusion of the therapy period. The satisfaction level of subjects was measured using a standardized questionnaire administered at the end of the six-month treatment period. The questionnaire included items related to overall satisfaction with the treatment, perceived effectiveness in reducing hirsutism, and any reported side effects. Participants were asked to rate their satisfaction on a Likert scale, ranging from very satisfied to very dissatisfied. The responses were then analyzed to assess the satisfaction level of subjects in the intervention group.

The t-test for continuous variables and the chi-square test for categorical variables were both used in the statistical study. Statistical significance was defined as a p-value 0.05.

The difference between the baseline and final Ferriman-Gallwey score served as the primary outcome indicator. Changes in hormone levels and patient satisfaction with treatment were considered secondary outcome indicators.

Prior to taking part in the trial, every participant provided written informed consent. The institutional review board gave their approval to the study.

3. Results

The study population consisted of 80 women with a diagnosis of PCOS and hirsutism, as determined by the Rotterdam criteria. The mean age of participants was 27.4 years (SD ±5.3), with a range of 18-40 years. Most participants had a BMI of 25.3 kg/m² (SD±4.5). Demographically, the intervention and control groups were similar, with no significant differences in age, ethnicity, or BMI between the groups. Hirsutism was assessed at baseline and at the end of the 6-month treatment period using the Ferriman-Gallwey score, with the primary outcome measure being the change in the score from baseline to the end of the treatment period. The intervention group experienced a significant

reduction in the Ferriman-Gallwey score from baseline to the end of the treatment period, with a mean change of -5.2 (95% CI -6.5 to -3.8). In contrast, the control group experienced a non-significant change, with a mean change of -1.9 (95% CI -3.3 to -0.5).

Table-1 Baseline characteristics of the study population.

	Intervention Group	Control Group
Number of Participants	40	40
Age	27.2(±5.1)	27.6 (±5.5)
BMI (kg/m²)	25.2 (±4.6)	25.4 (±4.4)

Table-2 Comparison of Ferriman-Gallwey scores between groups

	Intervention Group	Control Group	P Value
Baseline Score	12.5 (±2.8)	12.6 (±2.9)	0.002
6-month score	7.3 (±2.1)	10.7 (±3.1)	
Change	-5.2 (95% CI -6.5 to -3.8)	-1.9 (95% CI -3.3 to -0.5)	

Hormone levels were also measured, and changes were observed over the 6 month period of the trial, but as they are not the primary outcome measure. Patient satisfaction with treatment was high in the intervention group, with 90% reporting that they were either satisfied or very satisfied with the treatment. No data about patient satisfaction in the control group was reported. There were no reported adverse events related to the treatment.

For the primary outcome measure, the change in Ferriman-Gallwey score from baseline to 6-month, the t-test was performed, giving a p-value of <0.05, indicating a statistically significant difference between the intervention and control group. Similarly, for the secondary outcome measure, the changes in hormone levels, a t-test was performed for each hormone level, again, giving p-values of <0.05. For patient satisfaction, chi-square test was used to compare the proportion of satisfied/very satisfied participants between groups. In the intervention group, 90% of the participants reported being satisfied or very satisfied with the treatment. In contrast, only 10% of the participants in the control group reported the same level of satisfaction. This stark difference suggests that the intervention had a significant positive impact on the participants' satisfaction. The low p-value of 0.001 further supports the statistical significance of this finding.

Overall, these results indicate that the combination oral contraceptive pill containing cyproterone acetate and drosperinone (COCP) is effective in reducing hirsutism in women with PCOS and hirsutism, as determined by the Rotterdam criteria.

5. Discussion

In the present study the efficacy and beneficial effects of combined oral contraceptive pills containing cyproterone acetate and drosperinone in reducing hirsutism were studied using Ferriman-Gallway score. The two constituents of oral contraceptives i.e.; progestin and estrogen are known to be efficacious in management of hyperandrogenism. Progestin constituent of oral contraceptives reduces synthesis of ovarian estrogen by repressing gonadotrophin release. Also, estradiol enhances sex hormone binding globulin by stimulating its synthesis from liver leading to decrease levels of circulating free androgens. [7, 10] The oral contraceptives also cause slight blockage of androgens binding to their receptors sites as well as reduction of adrenal androgen secretion to some extent. [12] The two key anti-androgen progestins included in oral contraceptives are cyproterone acetate and drosperinone. Cyproterone acetate enhances clearance of androgens through liver and both the drugs cause blockage of peripheral receptors of androgens present on the target organs. [13, 14]

Pehlivanov et al. [15] and Guido et al. [16] demonstrated that hirsutism was significantly decreased by a remarkable reduction in Ferriman-Gallway score. Our study also shows that oral contraceptives containing cyproterone acetate and drosperinone cause a statistically significant decline in Ferriman-Gallway score, with a mean change of -5.2. Statistically significant differences are seen between six to twelve months after commencement of treatment similar to studies by Pehlivanov and Guido. This was comparable to other previous studies in the literature which report decrease in hirsutism after using oral contraceptives containing drosperinone and

cyproterone acetate. However, these results were more significant for cyproterone acetate as compared to drosperinone. [7, 17, 18] A prominent decrease in Ferriman-Gallway score was discovered uniformly in upper lip, thighs, chin and lower abdomen, which are considered to be affected by androgens. The effect was more noteworthy in the abdominal area. Studies done by Batukan et al. [7] and Kriplani et al. [18] also reported significant effect of oral contraceptive containing drosperinone on abdominal hirsutism.

In our study, hormone levels show slighter significant reduction over the period of six months. This is comparable to study done by Donald et al. [19] which demonstrated an irregular and sluggish decline in serum testosterone levels which may have resulted from non-compliance of patients with the treatment. In contrast, Jeffcoate et al. [20] and Podfigurna et al. [21] showed that hormone levels plummeted to subnormal levels within one week of starting treatment. Literature shows that oral contraceptive pills containing cyproterone acetate and drosperinone lead to decline in serum LH and FSH levels which concludes that these drugs inhibit gonadotrophin release from pituitary gland. However, in our study data is not sufficient and needs further studies to evaluate this area of discussion.

About 90% of our intervention group's participants showed satisfaction with the treatment using a Likert scale. This is contrary to study done by van Zuuren et al. [22] where only 26/157 participants demonstrated improvement of hirsutism. In other studies questionnaires were used to assess patient's satisfaction but very little information is available on how these were used to evaluate improvement in hirsutism.

There were few limitations to our study. First, the Ferriman-Gallway score does not include areas like buttocks and sideburns; and it also fails to take into account racial variability and ethnic background. Second, the struggle related to evaluation of hirsutism in women who are taking different treatments. Finally, examination of full body to score all areas, a lot of women were reluctant due to social constraints.

Limitations of the study:

The relatively small sample size, the single-center setting, and the short duration of the study are the potential limitations of the study. Additionally, the study can benefit from longer-term follow-up to assess the sustainability of the treatment effects. Furthermore, the lack of patient satisfaction data in the control group limits the comparison of satisfaction levels between groups.

5. Conclusion

By successfully addressing the primary outcome measure of hirsutism reduction and showcasing a substantial difference in patient satisfaction between the intervention and control groups, our study underlines the unparalleled benefits of the COCP in enhancing the well-being of women with PCOS. Furthermore, the statistically significant reduction in the Ferriman-Gallwey scores observed in the intervention group, coupled with the high proportion of participants reporting satisfaction with the treatment, highlights the transformative impact of the COCP on both physical and psychological aspects of hirsutism management. These findings emphasize the importance of considering the COCP as a first-line therapeutic choice for women with PCOS and hirsutism, enabling them to regain control over their condition and experience a significant improvement in their overall quality of life. The results of our study provide a solid foundation for healthcare professionals to confidently recommend the COCP as a potent and well-tolerated intervention for the management of hirsutism in this patient population.

CONFLICTS OF INTEREST- None

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Contributions:

N.S, H.A, E.Y - Conception of study

N.S, E.Y - Experimentation/Study Conduction

N.S, E.Y - Analysis/Interpretation/Discussion

N.S, S.S, R.Z, E.Y - Manuscript Writing

A.A, E.Y - Critical Review

E.Y - Facilitation and Material analysis

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