



**ORIGINAL RESEARCH PAPER**

**Gynaecology**

**Clinical and biochemical profile of women presenting with hirsutism and it's treatment outcome - a prospective study**

**KEY WORDS:** Hirsutism, PCOD, Treatment response.

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**ABSTRACT**

**BACKGROUND:** This study was undertaken to analyze the clinical profile, biochemical profile, various causes of hirsutism and response to treatment.

**MATERIALS AND METHODS:** This was a prospective study done for a period of 1 year. A total number of 73 patients were analyzed at Institute of Obstetrics & Gynaecology, Govt. Hospital for Women & Children, Egmore. After getting informed consent from the subjects, they were subjected to clinical and biochemical evaluation after history-taking. Blood was taken for hormone investigations and accordingly treatment given to them.

**RESULTS:** The subjects after clinical and biochemical analysis and ultrasound examination were grouped into PCOD and Non-PCOD. Treatment was given according to the cause of hirsutism. After treatment, 5 from PCOD group and 3 from Non-PCOD group conceived. There were 6 defaulters in the study. 2 post-menopausal subjects were advised laser treatment. 1 subject with malignant sertoli leydig cell tumor had recurrence of the tumor and died due to metastasis.

**CONCLUSION:** This study evaluates the various causes of hirsutism, their clinical and biochemical profile and their outcome after treatment. Treatment should be individualized depending upon the cause of hirsutism and the study has highlighted the importance of evaluating the other causes of hirsutism such as androgen secreting ovarian tumors and adrenal hyperplasia.

**INTRODUCTION**

Hirsutism is a disorder which affects 10-15% of women. Hirsutism is the most frequent androgen excess disorder in women. Hirsutism is defined as the excessive growth of terminal hair in androgen dependent areas of a woman's body. The sites include Upper lip, Chin, Chest, Upper & Lower Abdomen, Upper & Lower Back, Upper Arm and Thighs. Each of the nine areas is given a score of 0 to 4 depending upon the grade. Grade 1 - Mild, Grade 2 - Moderate, Grade 3 - Complete light coverage and Grade 4 - Complete heavy coverage. A score of more than 15 is considered as severe hirsutism.

Hirsutism should be differentiated from hypertrichosis. hypertrichosis is defined as a diffuse increase in vellus hair growth and is not androgen dependent. The congenital causes of hypertrichosis include Hurler syndrome, Trisomy 18, hypothyroidism, anorexia nervosa, severe head injury and trauma.

Drugs causing hypertrichosis include cyclosporine, diazoxide, hydrocortisone, minoxidil, penicillamine, phenytoin, psoralen and streptomycin.

**PATHOGENESIS:** Hirsutism can result from an increase in androgen level or due to the over sensitivity of the hair follicles to androgen. Large quantities of circulating androgens are bound to sex hormone binding globulin. Free testosterone is the main bio-active component. The SHBG can decrease in the body in many conditions such as obesity, hyperinsulinemia or after administration of androgen, glucocorticoids and growth hormone. The free testosterone level increases in the above conditions and the severity of hirsutism does not correlate well with the level of androgen. This is because the sensitivity of hair follicles to androgen varies among individuals. The enzyme 5 alpha reductase converts testosterone to highly active dihydro-testosterone.

Both insulin and LH stimulate ovarian theca cell androgen production. As a result affected ovaries secrete elevated levels of testosterone and androstenedione.

Insulin resistance independent of obesity has also been described as pathognomonic of PCOS. Clinically PCOS is characterized by menstrual irregularities, hyperandrogenism, hyperinsulinemia and long-term metabolic disturbances such as diabetes mellitus, cardiovascular disease and dyslipidemia. Insulin and body fat play an important role regulating lipid level.

Causes of hirsutism include idiopathic (which is often familial), ovarian causes (PCOS, androgen secreting tumor and menopause), adrenal causes (tumors, cushing syndrome and CAH) and drugs (steroids, metoclopramide, progesterone and phenothiazines).

**MATERIALS AND METHODS**

**STUDY DESIGN**

A prospective study

**INCLUSION CRITERIA**

Females with modified Ferriman-Gallwey scoring > 8 were included in the study.

After getting an informed consent from the subjects they were subjected to clinical and biochemical evaluation after history taking.

**EXCLUSION CRITERIA**

Women who were 60 years and above and pregnant women were excluded from the study.

**HISTORY**

History of presenting complaints were enquired. Age of onset of hirsutism and duration were asked. Any history of irregular cycles or amenorrhea elicited. Then history of infertility, recent weight gain and drug intake were also enlisted

**CLINICAL EXAMINATION**

Height and Weight measured and BMI calculated. The subjects were examined for signs of virilization and hyperandrogenism like acne, male pattern balding, increases muscle mass, deep voice and clitoromegaly.

**INVESTIGATIONS**

- 1) USG - Abdomen and Pelvis
- 2) CT - Abdomen in cases of Congenital Adrenal Hyperplasia and Malignant ovarian tumors
- 3) BIOCHEMICAL – Free Testosterone, DHEAS, 17-OH progesterone, TSH, Fasting blood sugar and Lipid profile done (FREE TESTOSTERONE - more sensitive indicator, DHEAS - is a direct measure of adrenal androgen activity, 17- OHP - measured in CAH and adrenal tumors)

**TREATMENT**

Subjects with idiopathic hirsutism and PCOS were given OC pills containing cyproterone acetate 2mg with ethinyl estradiol 35 mcg

for 6 months (6 cycles) and the outcome evaluated. The outcome evaluated were reduction in severity of hirsutism, regularization of cycles. IN those with weight gain, metformin was added in a dosage of 500 mg BD daily and looked for reduction in weight as well. Previous studies in women with documented PCOS have indicated that weight loss reduces insulin resistance and hyperandrogenism.

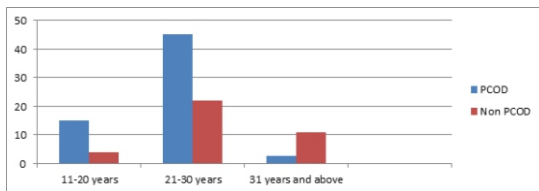
In those with infertility, OC pills containing 2mg of cyproterone acetate and 35 mcg of ethinyl estradiol was given for 3 months along with metformin if BMI > 25. Then Letrozole was given for 3 cycles in a dosage of 2.5 mg OD for 5 days starting from the second day of the cycle. Metformin was also continued. Follicular study is done starting from 9th day of cycles and subjects were advised intercourse when the follicle reaches 18-20 mm. Subjects were asked to report to the hospital if there was a missed period or onset of menses. Pregnancy was confirmed by Urine Gravindex test. IN those with Ovarian tumor, definitive surgery was done, depending on the stage followed by chemotherapy if needed. For CAH, Dexamethasone 0.5 mg OD was given to suppress the excess androgen level.

**LOCAL THERAPIES :** For patients with mild hirsutism, shaving, bleaching and depilators may suffice. Electrolysis is one of the permanent method of hair removal and may be adjunct to hormonal treatment.

**RESULTS AND ANALYSIS**

The subjects after clinical and biochemical analysis and ultrasound examination were grouped into PCOD and Non-PCOD group. Treatment was given according to the cause. Outcome evaluated were weight reduction, regularity of menstrual cycles and reduction in the scoring of hirsutism. After treatment, 5 from the PCOD group and 3 from the Non-PCOD group conceived. There were 6 defaulters in the study. 2 post-menopausal subjects were advised laser treatment. 1 subject with malignant sertoli cell tumor had recurrence of tumor and died due to metastasis. A P value of < 0.05 is significant.

**AGE DISTRIBUTION OF SUBJECTS WITH HIRSUTISM**



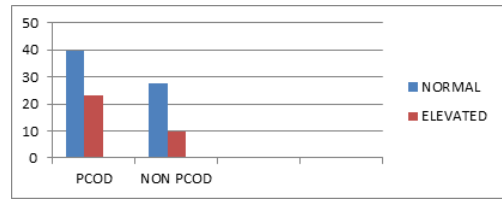
**CHI SQUARE TEST**

	VALUE	df	Asymp. Sig
<b>Pearson Chi-Square</b>	<b>9.787</b>	<b>2</b>	<b>0.007</b>
<b>Likelihood ratio</b>	<b>9.735</b>	<b>2</b>	<b>0.008</b>
<b>Linear-by-linear Association</b>	<b>7.471</b>	<b>1</b>	<b>0.006</b>
<b>N of Valid cases</b>	<b>73</b>		

**We infer that there exists a statistical significance between PCOD and Non PCOD group with reference to age distribution.**

	PCOD	NON PCOD	TOTAL	SIGNIFICANCE
<b>Hyperlipidemia</b>	5	7	12	
<b>% within group</b>	10.9%	25.9%	16.4%	
<b>% of total</b>	6.8%	9.6%	16.4%	0.094
<b>Elevated free testosterone</b>	17	7	24	
<b>% within group</b>	37%	25.9%	32.9%	
<b>% of total</b>	23.3%	9.6%	32.9%	0.333
<b>Elevated DHEAS</b>	6	9	15	
<b>% within group</b>	13%	33.3%	20.5%	
<b>% of total</b>	8.2%	12.3%	20.5%	0.038
<b>Elevated TSH</b>	2	6	8	
<b>% within group</b>	4.3	22.2%	11%	
<b>% of total</b>	2.7	8.2%	11%	0.018

**SUBJECTS OF HIRSUTISM WITH NORMAL AND ELEVATED FREE TESTOSTERONE LEVELS**



**REDUCTION OF HIRSUTISM SCORING AFTER TREATMENT IN THE PCOD GROUP**

**Paired sample Statistics**

PCOD GROUP	MEAN	NO.	STD. DEVIATION	STD. ERROR
<b>Hirsutism score pre-treatment</b>	<b>11.69</b>	<b>42</b>	<b>2.789</b>	<b>0.430</b>
<b>Hirsutism score post-treatment</b>	<b>10.69</b>	<b>42</b>	<b>3.272</b>	<b>0.505</b>

p = 0.000

There is a statistically significant reduction in hirsutism score after treatment in the PCOD group. The mean reduction is 1.

**REDUCTION IN HIRSUTISM SCORING AFTER TREATMENT IN THE NON PCOD GROUP**

NON PCOD GROUP	MEAN	NO.	STD. DEVIATION	STD. ERROR
<b>Hirsutism score pre-treatment</b>	11.59	22	2.462	0.525
<b>Hirsutism score post-treatment</b>	10.41	22	2.282	0.486

p = 0.001

There exists a statistical significance between the hirsutism scores of the pre-treatment and post-treatment Non PCOD subjects. There is a mean reduction by 1.18.

**SUMMARY**

In this study, 52 had ovarian causes (46 - PCOS, 4 - Ovarian tumor, 2 - premature ovarian failure),

one had adrenal cause (late onset CAH), 6 had hypothyroidism as a cause for hirsutism.

- Majority of cases of hirsutism in this study fall in the 21-30 years age group
- In addition to hirsutism, menstrual irregularity is the chief complaint
- Majority had hirsutism scoring of 9-11. Severe hirsutism (Score > 15) was seen in Androgen secreting ovarian tumor and PCOS (4 cases).
- Virilization features commonly were seen in all the 4 ovarian tumors and late onset CAH. Highly elevated free testosterone levels were seen in androgen secreting ovarian tumor and late onset CAH
- Subjects with hirsutism were either overweight or obese except ovarian tumors and CAH
- Co-morbid conditions like hyperlipidemia, diabetes mellitus and hypertension were seen in few PCOS and few Non PCOS subjects.
- Level of testosterone did not correlate with the severity of hirsutism in PCOS group.

**CONCLUSION**

This study evaluates the various causes of hirsutism, their clinical and biochemical profile and their outcome after treatment. Although PCOS is the most common cause for hirsutism, other causes should also be thought of. The treatment should be individualized depending upon the cause of hirsutism. We should have a high suspicion of virilizing tumors if features of virilization are present. Hirsutism has a response to OCP containing

cyproterone acetate but the reduction in severity of hirsutism is mild. They might need increase in the duration of treatment and dosage of cyproterone acetate. Free testosterone and DHEAS may or may not be elevated in PCOS. Majority have normal levels. Free testosterone is highly elevated in androgen secreting ovarian tumors. This study has highlighted the importance of evaluating the other causes of hirsutism such as androgen secreting ovarian tumors and adrenal hyperplasia. Hirsutism causes cosmetic problem and psychological upset on a woman. It can also be a manifestation of an underlying health problem. Hence it should be properly treated so that a favourable outcome can be obtained.

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