

## Iraqi Women with Hirsutism, Clinical and Biochemical Characteristics: Retrospective Study

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**Abstract:** This clinical research aimed to assess the frequency of different some clinical and biochemical features of hirsutism among Iraqi women retrospectively. **Methods:** This study is a descriptive cohort study included 100 Hirsutism-affected females. A retrospective analysis of patient assessed using the recently approved diagnostic guidelines for hyper androgenic women with hirsutism Clinical features, family history and hormone levels results were analyzed. Results: At our presentation, the mean age of the 100 Hirsutism-affected females was 26.9 years ranged of (13-42) years. The mean of BMI (kg/m<sup>2</sup>) for all patients was 27.38 (Overweight), 55% of women had oligomenorrhea, 3 % had amenorrhea and 42% had none. Associated features were highly Significant (P<0.01), highly percentage was 39% acne, the low percentage was 6% Alopecia and Acne while 47% of them were none. About 90% of all patients had TSH>0.5(U/mL) while 10 % had TSH <=0.5(U/mL). The mean total serum testosterone level and free testosterone were 0.598 in 72%, 27.69 in 83% of the patients respectively. The mean serum prolactin level was 24.82 but the mean serum DHEA-S (µg/dL) were 328.62 in all patients. A family history was found in 40% of the patients. conclusion: In the current study the clinical characteristics of Hirsutism was more common in women with a high Body Mass Index nearly a half of them. The most Associated features in hirsute women was Acne and Alopecia. Also more than half of them had oligomenorrhea. While a Biochemical Characteristics study revealed that 90% of hirsute women had hypothyroidism, There is a 37% increase in DHEAS levels, a 72% increase in total testosterone, and a 35% increase in prolactin. The prolactin and total serum testosterone level elevation were not severe. About 40% of the patients had a family history.

**Keywords:** Hirsutism, Retrospective, Clinical features, Biochemical Characteristics, Iraqi Women.

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## INTRODUCTION

Hirsutism is described as the excessive growth of terminal hair in areas of the body that rely on androgens in women. It often results in a decreased quality of life and has a negative effect on a woman's perception of her feminine identity, and it may indicate more serious underlying health problems [1]. Hirsutism can be classified into three groups based on its causes: androgenic factors, non-androgenic factors, and idiopathic hirsutism. Hypertrichosis involves excessive hair growth unrelated to sexual development and is not affected by androgens [2]. Typically, hirsutism is caused by a non-cancerous process. However, identifying the

exact cause is essential, as it could be an early indication of a more serious health issue. While hirsutism is a clear sign of excessive androgen activity at the hair follicle level, the intensity of hirsutism does not always reflect the level of androgen excess [3]. Hirsutism, the condition characterized by excessive hair growth, is influenced by various factors beyond just the levels of circulating androgens. These include how the body processes androgens, the sensitivity of the body's tissues to androgens, and other hormonal factors like insulin resistance. Certain medications can also cause hirsutism. In patients whose hirsutism is not linked to medication use, conditions like PCOS, adrenal gland enlargement, thyroid problems, Cushing's syndrome, and tumors that

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produce androgens are checked for. Most cases of hirsutism are due to natural causes. Therefore, it's important to distinguish between different types of hirsutism based on symptoms such as [4, 5]: idiopathic hirsutism - women with hirsutism and normal androgen levels, regular menstrual cycles, and normal ovaries; idiopathic hyperandrogenism - women with high androgen levels but regular menstrual cycles and normal ovaries; classic PCOS. Additionally, experts suggest considering congenital adrenal hyperplasia (CAH) and tumors that produce androgens in women with hirsutism. Although many women come to see a doctor because hirsutism is bothersome, it's crucial to determine if there's an underlying endocrine disorder that requires treatment. Since there's no clear way to tell the difference between hirsutism caused by natural factors and those caused by medical conditions, a thorough family history and physical examination are key in assessing hair growth in women. The majority of hirsutism cases in women are of the idiopathic type. Once hirsutism is identified, it's important to look for other signs of androgen excess, such as persistent acne, female-pattern hair loss, and skin conditions like seborrhea. More serious signs of androgen excess include enlarged clitoris, deepening of the voice, male-pattern hair loss (especially on the forehead and scalp), and loss of feminine body shape. Testing for androgen levels should be considered in women with moderate to severe hirsutism, as well as in women with any sudden, rapid, or unusual hirsutism, or those with symptoms like irregular periods, central obesity, dark skin patches, or enlarged clitoris. Other factors like age, ethnicity, family history, and the type of medication being taken should also be taken into account. Non-cancerous hirsutism is most common during puberty, with androgen levels rising following weight gain or stopping oral contraceptives.

The historical record must be as comprehensive as possible, encompassing the following areas: the onset of symptoms and the progression of the disease; the age at first menstruation and menstrual history; the individual's ethnic background (which influences the natural occurrence of certain traits due to ethnicity); the family's history of conditions like hirsutism or hypercortisolism; lifestyle factors such as diet, exercise, and changes in body weight; whether there are signs of

virilization; the use of medications; and any additional symptoms linked to hirsutism, such as galactosemia A. A skin examination is necessary as high levels of androgens can lead to skin reactions like acne, overproduction of sebum, or widespread or localized hair loss [10]. To calculate the body mass index (BMI), the individual's height and weight should be used. Blood pressure readings should also be taken. Skin conditions such as acanthosis nigricans (indicating insulin resistance), acne vulgaris (particularly if it worsens during menstruation and is resistant to treatment), seborrhea, and patterned hair loss are all potential skin issues [9]. A physical examination should also search for indications of virilization, including a deeper voice, enlarged clitoris, loss of breast tissue, and increased muscle mass. A physical exam of the abdomen and pelvis can help identify the presence of an ovarian or adrenal tumor [9].

## MATERIALS AND METHODS

This research is a descriptive cohort study that involved 100 women suffering from Hirsutism. A Seca scale determined both height and weight. A clinical examination was conducted to look for evidence of acne, alopecia, and other signs of virilism [12]. Hormone tests for prolactin, testosterone, DHEAS, and thyroid function were conducted in the hospital lab, with results compared to standard kit ranges. Weight divided by height squared (kg/m<sup>2</sup>) was used to calculate Body Mass Index, and the data was then analyzed with IBM SPSS version 18 [13]. Average values are presented with +/- standard deviation (SD). Statistical significance was determined by differences with a P-value < 0.05. Obesity and overweight were classified according to WHO standards as having a BMI of 30 kg/m<sup>2</sup> and 25 kg/m<sup>2</sup>, respectively. Amenorrhea was characterized by the lack of menstrual cycles for the past half year, while oligomenorrhea was defined as periods lasting over 35 days.

## RESULTS

In the table (1) we can show that the means, SD, SE and Range of different parameters study of patients such as age, Prolactin (ng/mL), DHEA-S (µg/dL), Total testosterone (ng/mL), Free testosterone (ng/ dL), TSH (U/mL) and BMI (kg/m<sup>2</sup>).

**Table 1: Mean, SD, SE and Range of parameters study of patients**

Parameters	No	Mean	SD	SE	Range
Age (year)	100	26.97	6.40	0.65	13 - 42
Prolactin (ng/mL)	100	24.82	13.79	1.38	6 - 120
DHEA-S ((µg/dL))	100	328.62	119.58	11.96	140 - 800
Total testosterone (ng/mL)	72	0.598	0.216	0.025	0.20 – 1.50
Free testosterone (ng/ dL)	83	27.69	5.50	0.604	0.60 -39.00
TSH U/mL	97	3.90	3.84	0.390	0.001-30.0
BMI (kg/m <sup>2</sup> )	100	27.38	4.67	0.467	13 - 40

In table (2) Associated features was highly Significant (P≤0.01), the highly percentage was 39%

acne, the low percentage was 6% Alopecia and Acne while 47% of them were none.

**Table 2: Distribution of patients according to Associated features**

Associated features	No	Percentage (%)
Acne	39	39 %
Alopecia	8	8 %
Alopecia and Acne	6	6%
None	47	47%
Total	100	100%
P-value	---	0.0001 **
0.0001 **		

In table (3) the results of patients according to TSH test were highly Significant ( $P \leq 0.01$ ). The highly

percentage was 90 %  $TSH > 0.5(U/mL)$ , the low percentage was 10%  $TSH \leq 0.5(U/mL)$ .

**Table 3: Distribution of patients according to TSH test**

TSH(U/mL)	No	Percentage (%)
$TSH \leq 0.5$	10	10 %
$TSH > 0.5$	90	90 %
Total	100	100%
P-value	----	0.0001 **
** ( $P \leq 0.01$ ).		

In table (4) the results of patients according to Oligomenorrhea were highly Significant ( $P \leq 0.01$ ). The highly percentage had Oligomenorrhea 55 %, the low

percentage had Amenorrhea 3%. While 42% were normal.

**Table 4: Distribution of patients according to Oligomenorrhea**

Oligomenorrhea	No	Percentage (%)
Yes	55	55 %
Normal	42	42 %
Amenorrhea	3	3%
Total	100	100%
P-value	---	0.0001 **
** ( $P \leq 0.01$ ).		

In table (5) the results of patients according to Family history were high Significant ( $P \leq 0.05$ ). The high

percentage had not Family history 60 %, the low percentage had Family history 40%.

**Table 5: Distribution of patients according to Family history**

Family history	No	Percentage (%)
Positive (+ve)	40	40 %
Negative (-ve)	60	60 %
Total	100	100%
P-value	---	0..0455 *
* ( $P \leq 0.05$ ).		

## DISCUSSION

Hirsutism is characterized by an excess of terminal hair growth in areas of the female body that are influenced by androgens. It is frequently connected with a lower quality of life and a compromised self-perception of the patient's feminine identity, and it could be related to significant underlying illnesses [1]. The current results revealed mean age concentration was  $(26.97 \pm 6.40)$  years similar to mean ages in study for Iranian peoples which was  $28 \pm 6.2(\text{mean} \pm \text{SD})$  years [14] and Iraqi study that recorded ages ranged from 16 to 45 years with a mean  $27.7 \pm 7.4 \text{ SD}$  [15]. The mean of BMI (kg/m<sup>2</sup>) for all patients were 27.38 (Overweight) this result agrees with [16], who found that mean of BMI was 30.4

$\pm 6.8 \text{ kg/m}^2$  and [14] BMI were 53% Overweight and 63 % patients were obese in their results. The total testosterone and prolactin increased in 72% and 35% in all patients respectively this results agreed with study in Libyan [17], that found Total serum testosterone was elevated in 26% of their patients, and serum prolactin was elevated in 31% of them. There is a 37% increase in DHEAS levels in our results which is similar to study found that Women with hirsutism in their data had high DHEA-S levels [18]. which were higher than those seen by some authors [19-20], the different biochemical assay methods used for androgen estimation and different cut-off values used in the study can explain the diversity in androgens levels. Our study revealed that 90% of hirsute

women had hypothyroidism. Associated features were highly percentage 39% acne. This results similar to 45% in Chinese women [21], as compared with [17] only 12% of their patients had acne. In our patients 55% of women had oligomenorrhea but 3% of them had amenorrhea while 42% normal menstrual cycle. The frequency of Oligomenorrhea (55%) observed in this cohort was similar to that reported in the USA (70%) [22]. This results disagree with study in Libyan [17], which found Oligomenorrhoea in 85.8%, amenorrhea in 7.5%, while 6.6% had normal menses, and study by [23] that found more than half of menstruating women had a regular menstrual cycle (51.1%), 25.2% had oligomenorrhea and 13.3% had amenorrhea. this can explained by in our patients were not reported with PCOS disease. This study found that high percentage of women 60 % had not Family history, while the low percentage 40% of them had Family history. Our results less than with study that reported positive family history of hirsutism was present in 63.7% [23, 24] also study on Saudi females that included 29% of them had a positive family history [25] and family history of hirsutism was observed in 48.4% study conducted in Iraq by [15].

## CONCLUSION

In the current study the clinical characteristics of hirsutism was more common in women with a high Body Mass Index nearly a half of them. The most Associated features in hirsute women was Acne and Alopecia. Also more than half of them had oligomenorrhea. While a Biochemical Characteristics study revealed that 90% of hirsute women had hypothyroidism, There is a 37% increase in DHEAS levels, a 72% increase in total testosterone and 35% increase in prolactin. The prolactin and total serum testosterone level elevation were not severe. About 40% of the patients had a family history.

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