History of Medicine, 2023, 9(1): 1051–1053
DOI: 10.17720/2409-5834.v9.1.2023.124

Assessment of Hirsutism in Patients with Endocrine Disorders

Noor Al-Zahraa F. Ghalib[1], Dawood S. Mahdi[2*], Hussein A. Nwayyir[3]

[1] Southern Technical University-Collage of Health and Medical Techniques, Basra, Iraq
[2] Southern Technical University-Collage of Health and Medical Techniques, Basra, Iraq
EM: dr.dawds@stu.edu.iq
[3] University of Basra- College of Medicine

*Corresponding author: Dawood S. Mahdi (dr.dawds@stu.edu.iq)

Received: 20 January 2023 **Accepted:** 15 April 2023

Citation: GhalibNAZF, Mahdi DS, Nwayyir HA (2023) Assessment of Hirsutism in Patients with Endocrine Disorders. History of Medicine 9(1): 1051−1053. https://doi.org/10.17720/2409-5834.v9.1.2023.124

Abstract

Hyperandrogenism is one of the most common endocrine disorders affecting approximately 7% of population with clinical manifestations of hirsutism. Hirsutism is the most recognizable clinical symptom of hyperandrogensim in women characterized by presence of excess terminal body or facial hair growth in male like pattern in androgen dependent areas. Time and food intake seem to have effect on androgens hormone. The mean of age for hirsute female, BMI and FG score are (25.5±6.2, 29.4±6.5 and 12.4±8.2) respectively. The valves of SHBG in fasting and non fasting hirsute females were (34.2±23.2, 33.3±22.7) respectively with significant difference, the value of testosterone was increased in fasting females (53.9±28.9) significantly more than non fasting while the value of DHEA-S was slightly increased in non fasting females. Moreover, in control groups only testosterone show significant difference (28.05±10.2) in fasting

Keywords
Hirsutism, BMI, Hyperandrogenism, SHBG and testosterone

Androgens are part of steroid hormone produced from adrenal glands and ovaries through the conversion of cholesterol through a series of enzymatic processes (Pasquali & Oriolo, 2019). The most common hormone is testosterone as well as dehydroepiandrosterone (DHEA), dehydroepiandrosterone sulphate (DHEA-S), androstenedione and dihydrotestosterone (DHT) (Zeng et al., 2020). Androgens act directly on target tissues that express androgen receptors (AR) (Simitsidellis et al., 2018)

Hyperandrogenism is one of the most common endocrine disorders that shown excessive production of androgens (Karrer et al., 2009) , affecting approximately 7% of population (Cupisti et al., 2007) and it is the main criterion in the diagnosis of polycystic ovary syndrome (PCOS) (Pasquali et al ., 2016).

Clinical manifestations of hyperandrogenism are hirsutism, androgenic alopecia or female pattern hair loss (FPHL), acne and ovulatory dysfunction. Biochemical hyperandrogenism is typically defined by increased levels of circulating total testosterone and dihydrotestosterone, also by elevated dehydroepiandrosterone and its sulfate ester and androstenedione (Schiffer et al.,2019). Hirsutism is the most recognizable clinical symptom of hyperandrogensim in women and these women should be evaluated endocrinologically, because most women have an androgen excess related disorder (Cupisti et al., 2007).

Material and Methods

This study was performed in Faiha Specialized Diabetes, Endocrine and Metabolism Center (FDEMC) in Basrah from October 2020 till April 2021.

Forty female patients have hyperandrogenism and suffering from hirsutism with age group between (15 -45) years who are attending to FDEMC are involved in this study. Data including age, body mass index (BMI) and FG score were gathered from patients through direct interviews with each

patient by providing each patient with a written informed consent to fulfill the ethical committee of research. A total of 20 healthy female matching in age with patient group.

Five milliliters of venous blood were collected from each subject by vein puncture in separated gel tubes after fasting for 8 hours to get baseline sample before 09:00 A.M. and then Another blood sample was collected from each subject after food intake on the same day around 12:00 P.M for measurement of SHBG, testosterone and DHEA-S.

Results

General characteristics

General characteristics of patients and controls show there was no difference in age between the two groups (P≤ 0.9), while in BMI there was significant difference between the two groups (P≤0.05). (Tab. 1).

Table (1): General characteristics

Variables	Patients	Controls	P value
	Mean ±SD	Mean ±SD	
Age (years)	25.50 ±6.25	25.30 ±6.20	0.907
BMI (Kg/m^2)	29.44 ±6.54	23.73 ±3.47	<0.05
FG score	12.45 ±8.23		

Effect of food and time on patients and controls.

Table (2) shows the comparison between patients and controlled group for androgen levels, there was significant difference in the level of SHBG, testosterone and DHEA-S.

Table (2): Effect of food and time on patients and controls

Variables	Fasting (patients and controls)	Non-Fasting (patients and controls)	p value
	Mean ± SD	Mean ± SD	
SHBG(nmol/L)	41.26 ± 27.71	40 ± 26.21	0.008
Testosterone(ng/dL)	45.33 ± 27.16	40.29 ± 31.59	<0.05
DHEA-S(µg/dL)	319.2 ± 182.2	339.42 ± 181.39	0.027

Effect of food and time on patient group

Comparison between fasting and non-fasting patient group for androgen levels is in table (3) shows significant difference in SHBG and testosterone levels (P 0.012; 0.037) and no difference in DHEA-S level (P 0.064) despite the numerical difference in DHEA-S level.

Table (3) Effect of food and time on patients group

Variables	Fasting(N=40)	Non-Fasting(N=40)	p value
	Mean±SD	Mean±SD	
SHBG(nmol/L)	34.20±23.25	33.32±22.74	0.012
Testosterone(ng/dL)	53.97±28.90	50.26±34.08	0.037
DHEA-S(µg/dL)	376.29±195.20	400.68±187.25	0.064

Effect of food and time on controlled group.

This table (4) shows comparison between fasting and non-fasting control group with significant difference in testosterone p<0.05 while there was no difference in SHBG and DHEA-S.

Table (4) Effect of food and time on controlled group

Variables	Fasting(controls)	Non-Fasting(controls)	p value
	Mean ±SD	Mean ±SD	
SHBG(nmol/L)	55.38 ±30.99	53.37 ±28.11	0.116
Testosterone(ng/dL)	28.05 ±10.21	20.3 ±9.34	<0.05
DHEA-S(µg/dL)	205.06 ±65.75	216 ±80.65	0.133

Discussion

Hirsutism is a common endocrinological disorder. The causes of this disorder can may vary from dissatisfaction with a normal pattern of hair growth and the first clinical manifestation of androgen increasing by an adrenal adenocarcinoma. An approach should be to working through the differential for the various forms of hirsutism and knowledge of its risk and benefit (Loriaux, et al. 2012).

In present study which included 60 women, 40 of them were diagnosed with hyperandrogensim and suffering from

hirsutism , and 20 of them were control group. The age of two groups patients and controls indicates there is no significant differences in age between the two groups (p 0.9), while MBI showed significant between these groups ($p<0.05$) and this because most hyperandrogensim women have POCS and tent to be overweight, it can even also be detected in obese women with non-PCOS (Pasquali & Oriolo, 2019).

There are few studies (First study in Iraq) to evaluate the short term effect of food intake on the level of SHBG, testosterone and DHEA-S in women with hyperandrogenism, we seen there was decreased in testosterone level and no difference in DHEA-S after eating in both patient and control groups. A study done by Katcher et al. (2009) found there was decreased in testosterone level about 27% within 2 hours of meal in women with PCOS, DHEA-S was decreased 8%-10% within 2-3 hours of meal then increased after that period while there was no change in SHBG level . Decreased in testosterone level that we observed is consistent with this study. In another study by Panidis et al. (1997) reported that serum testosterone levels significantly decreased about 19%-42% after 3 hours of oral administration of 75g. dextrose in PCOS patients with or without insulin resistance and healthy women, while DHEA-S levels were not changed Also time can effect on testosterone levels by decreasing it's levels due to circadian rhythm. Gymez-Acebo, Inйs et al. (2015) described the effect of time in healthy women working at day shift and night shift, blood collection was 08:00±1, testosterone levels were lower in night shift women who was in the luteal phase, this can be explained by circadian rhythm that will effect testosterone levels (107). and no difference in DHEA-S, this maybe due to the time of collecting sample was in morning.

References

Cupisti, S., Dittrich, R., Binder, H., Kajaia, N., Hoffmann, I., Maltaris, T., ... & Mueller, A. (2007). Influence of body mass index on measured and calculated androgen parameters in adult women with hirsutism and PCOS. Experimental and clinical endocrinology & diabetes, 115(06), 380-386.

Gomez-Acebo, Dierssen-Sotos, T.; Papantoniou, K. et.al.(2015). Association between exposure to rotating night shift versa day shift using levels of 6-sulfatoxymelonin and cortisol and other sex hormons women. Chronobiology international, 32(1): 128-135.

Karrer-Voegeli, S., Rey, F., Reymond, M. J., Meuwly, J. Y., Gaillard, R. C., & Gomez, F. (2009). Androgen dependence of hirsutism, acne, and alopecia in women: retrospective analysis of 228 patients investigated for hyperandrogenism. Medicine, 88(1), 32-45.

Katcher, H. I., Kunselman, A. R., Dmitrovic, R., Demers, L. M., Gnatuk, C. L., Kris-Etherton, P. M., & Legro, R. S. (2009). Comparison of hormonal and metabolic markers after a high-fat, Western meal versus a low-fat, high-fiber meal in women with polycystic ovary syndrome. Fertility and sterility, 91(4), 1175-1182.

Loriaux, D.L. (2012). An Approach to the Patient with Hirsutism, The Journal of Clinical Endocrinology & Metabolism, Volume 97, Issue 9(1): 2957−2968.

Panidis, D., Rousso, D., Skiadopoulos, S; et al. (1997): Dose postprandial hyperinsulinemia to hyperandrogenism in patients with polycystic ovary syndrome? Journal of Clinical and expermintal obstetrics gynecology, 24(2):88-91

Pasquali, R., & Oriolo, C. (2019). Obesity and androgens in women. Hyperandrogenism in Women, 53, 120-134.

Schiffer, L., Arlt, W., & O'Reilly, M. W. (2019). Understanding the role of androgen action in female adipose tissue. Hyperandrogenism in Women, 53, 33-49.

Simitsidellis, I., Saunders, P. T., & Gibson, D. A. (2018). Androgens and endometrium: new insights and new targets. Molecular and cellular endocrinology, 465, 48-60.

Zeng, X., Xie, Y. J., Liu, Y. T., Long, S. L., & Mo, Z. C. (2020). Polycystic ovarian syndrome: correlation between hyperandrogenism, insulin resistance and obesity. Clinica Chimica Acta, 502, 214-221.