Journal of Pharmaceutical Research International

33(43B): 384-389, 2021; Article no.JPRI.73733
ISSN: 2456-9119
(Past name: British Journal of Pharmaceutical Research, Past ISSN: 2231-2919, NLM ID: 101631759)

A Clinico-etiological Evaluation of Hirsutism Patients: A Case Series

Sohan A. Patel[1*], Jayant B. Dave[2] and Timir Y Mehta[3]

[1]Smt. S. M. Shah Pharmacy College, Amasaran, India.
[2]L. M. College of Pharmacy, Ahmedabad, Gujarat, 380009, India.
[3]Samarpan Medical Research Organization, Modasa, Gujarat, 383315, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i43B32568
Editor(s):
(1) Dr. Rafik Karaman, Al-Quds University, Palestine.
Reviewers:
(1) Vijay kumar Rekulapally, Hikma Pharmaceuticals, USA.
(2) Sinha Ashutosh Kumar, Bharat Pharmaceutical Technology, India.
Complete Peer review History: https://www.sdiarticle4.com/review-history/73733

Case Study

Received 30 June 2021
Accepted 10 September 2021
Published 14 September 2021

ABSTRACT

Background: Hirsutism is a condition of excess hair growth in females in male-like distribution. It is seen in almost 5-10% of women. Women having hirsutism have a negative impact on quality of life.
Aim: All patients were subjected to ultrasound imaging (Sonography) and hormonal evaluation to establish possible causative factors.
Methods: A prospective and retrospective study of hirsutism patients, who were evaluated at Samarpan medical research organization, Modasa, Gujarat from 2016 to 2019.
Results: In this case series age and clinical presentation were studied in five female patients diagnosed with hirsutism. The patients age ranged from 16 to 22 years with a mean of 19.60 years. All these patients showed localized hair growth on the upper lip, chin, and cheek on the face. Ultrasound study revealed that one of the five patients had a right bulky ovary and four patients showed both ovaries with multiple follicles. In hormonal evaluation, in one of the three patients the LH: FSH ratio was found to be more than 3. Three out of the five patients showed elevated levels of 17-OHP and serum testosterone. Two out of the three patients showed an elevated level of serum insulin. The level of DHEAS, serum prolactin, serum cortisol, and serum TSH were found to be in a normal range.
Conclusion: Ultrasonographic (USG) study revealed a positive correlation between PCOS and

**Corresponding author: E-mail: sohanpharma@gmail.com;*

Hirsutism patients. Hirsutism patients were found to have higher levels of 17-OHP, serum testosterone, serum insulin, and a higher ratio of LH: FSH, one or more at a time suggesting a strong correlation between elevated levels of these hormones and hirsutism. The present study could not establish any meaningful correlation between the level of DHEAS, serum prolactin, serum cortisol, and serum TSH.

Keywords: Hirsutism; Ultrasound; hormonal evaluation.

1. INTRODUCTION

Hirsutism is defined as the presence of terminal coarse hairs in females in a male-like distribution [1]. It is seen in almost 5-10% of women and may be related to significant underlying endocrine disorders like PCOS, CAH, hypothyroidism and Cushing's syndrome [2]. Women having hirsutism have a negative impact on quality of life [3].

Hirsutism can be androgen induced or non-androgen induced. Hyperandrogenism with hirsutism can be associated with various signs and symptoms such as Acanthosis Nigricans (AN), obesity, acne, virilization, Female Pattern Hair Loss (FPHL) and pelvic mass. Hirsutism is as male-pattern growth of terminal body hair in women in androgen-stimulated locations such as face, chest, and areolae. Hirsutism can be classified broadly into 2 groups viz. androgen induced, and non-androgen induced [3-4].

Hirsutism can be idiopathic, meaning that the hair follicles are more receptive to normal circulating levels of androgens, or it can be caused by an excess of androgens and other hormones. The ovaries, adrenals, or greater peripheral conversion of weak androgenic hormones to more strong ones could all be sources of excess androgens [5]. Such as testosterone (T) and dihydrotestosterone (DHT), IH shows normal levels of androgens [6]. The most common reason for the excess androgen levels is PCOS and 60–80% of PCOS women suffer from hirsutism [7].

Hence, it is important to evaluate every patient who complains of unwanted facial or body hair. In this study attempt has been made to analyze the underlying causes for hirsutism along with the associated clinical manifestations.

2. METHODS

A retrospective study of 88 patients was conducted with various dermatological conditions at one dermatological clinic, Modasa, from 2015 to 2019. Clinical data was collected that included age at the onset of cutaneous symptoms leading to the diagnosis of various dermatological disorders.

In this case series age, locations, clinical presentation of hirsutism and pattern of extra hair growth and distribution was followed.

All the five patients were subjected to ultrasound imaging (Sonography) to examine the body's internal organs such as liver, ovaries, pancreas, gall bladder, spleen, kidney, bowel, uterus, and urinary bladder.

All the patients were subjected to estimation of different hormonal tests viz (Dehydroepia-ndrosterone (DHEAS), Serum prolactin, Serum cortisol, 17α-hydroxyprogesterone (17- OHP), serum testosterone, Follicle stimulating hormones (FSH), Serum Insulin, Thyroid stimulating hormones (TSH) and luteinizing hormone (LH) to find out the possible correlation with hirsutism.

3. RESULTS AND DISCUSSION

Five female patients with hirsutism were identified from monitoring 88 patients with Dermatological disorders. The patients age ranged from 16 to 22 year with a mean of 19.60 years. [8] found a similar age distribution in her research of thirty hirsutism patients, with the majority (50%) being between the ages of 21 to 30 years.

In these patients, neither any systemic disease nor any clinical symptoms were found except for hair on different parts of the body. All these patients showed localized hair growth on the upper lip, chin, and cheek on the face which is the characteristic of hirsutism. there were no epidermal changes in hirsutism area [Fig. 1]. This compares well with study by Navakumar at al., [9] where majority of patients had mixed lip, chin, and body hair involvement and some had both lip and chin involvement.

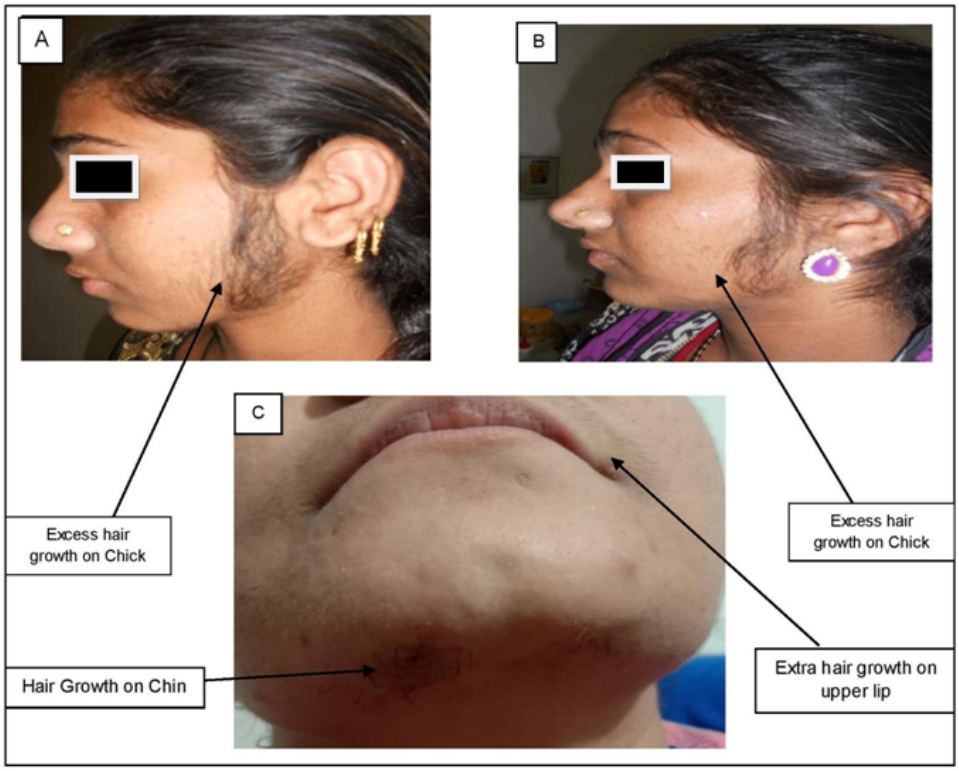

Fig. 1. Physical evaluation of Hirsutism patients on A. chick, B. chin and upper lip

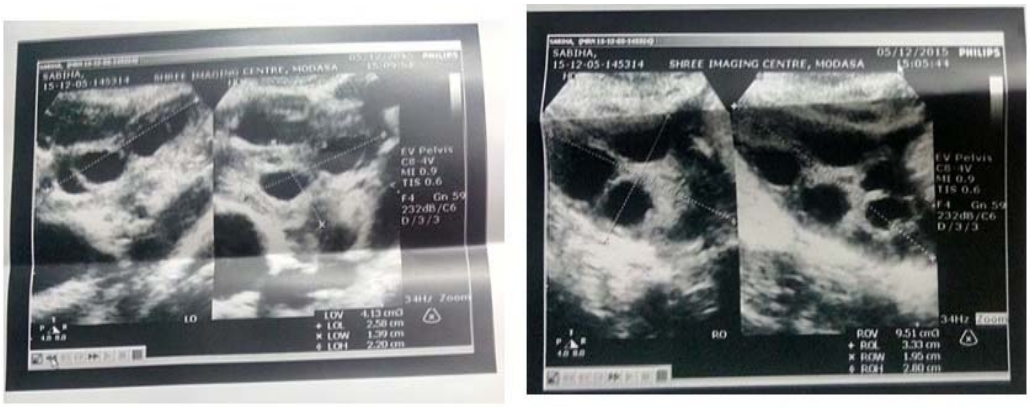

Fig. 2. Ultrasound sonographic evaluation of ovaries

In current study, all five patients had mild to moderate hirsutism. These observations were similar [10] (mild hirsutism in 65%, moderate in 32.5%, and severe in 2.5%).

Ultrasonographic (USG) study revealed, One of the five patients showed right bulky ovary and four patients showed both ovary with multiple follicles. This study corroborated with observations reported by Hassa H et al. [11]

4. HORMONAL EVALUATION

Serum prolactin level was found normal within range in all patients studied and hence the reported effect of serum prolactin on increasing level of free testosterone could not be determined. There is no direct correlation between prolactin and hirsutism. Hyperprolactinemia was seen in 12.5 % patients by Soudabeh Tirgar-Tabari et al. [12].

Table 1. Different Hormonal parameters of hirsutism patients

ID	S. Prolactin	LH	FSH	LH/FSH ratio	17- OHP	DHEAS	S. Cortisol	S- testosterone	S. Insulin	TSH
1	6.08	---	---	--	0.76	168.5	9.06	0.20	---	3.25
2	9.24	5.46	7.37	0.74	1.36	130.3	10.71	0.87	54.47	2.05
3	7.84	22.46	6.76	3.32	1.83	62.3	13.71	1.92	11.76	1.46
4	--	---	---	--	---	385.7	10.97	0.57	---	0.96
5	14.48	0.72	2.33	0.33	1.87	57.9	10.91	0.69	213.49	0.58

LH (1.24 – 7.8 IU/L), FSH (4.7 – 21.5 miu/ml), LH/FSH ratio (1 – 2 for normal and more than 2 increase), 17-OHP (0.20 – 1.03 ng/ml), DHEAS (51 – 321 µ/ml), Serum Cortisol (5 – 23 µ/ml), Serum Testosterone for adult (0.15 – 70 ng/ml), Serum Testosterone for age 11.8 – 18.6 yrs (0.15 – 40 ng/ml), Serum Insulin (2.6 – 37.6 mu/l), Serum TSH (0.5 – 5.0 miu/ml)

Pituitary hormones: Elevated level of LH along with low or normal FSH is reported to increase the level of androgen presenting in hirsutism. The ratio of LH:FSH of more than 2 is indicating PCOS and suggestive of Hirsutism. In present study, in one out of three patients the ratio was found to be more than 3. However, all five hirsutism patients were found suffering from PCOS in sonographic study confirming strong relation between PCOS and Hirsutism. The findings correlate well with study of *Chhabra S at al*. where LH/FSH ratio was found to be raised in 78.57% hirsute patients with PCOS whereas LH/FSH ratio was raised in only 16.67% patients without PCOS [13].

Androgen: Three out of the five patients showed elevated levels of 17-OHP and serum testosterone conforming their association with hirsutism. One out of five patients showed elevated levels of DHEAS, but level of 17-OHP and serum testosterone were within limit. This study partially tallied with the published literature. H Hassa at al., [14] who found that blood levels of DHEAS and 17-OHP were higher in Hirsutism patients when compared with control group and Nand Lal Sharma at al., [15] Polycystic ovaries were detected in 30% patients and 22% patients had elevated serum free testosterone levels

Serum cortisol: The level of cortisol found to be normal in all the five patients and no correlation was found between serum cortisol level and hirsutism. The finding did not conform to report of Maroulis GB at al who found elevated level of serum cortisol in 32 hirsutism patients [16].

Serum insulin: Two out of the three patients showed elevated level of serum insulin that is known to present in PCOS with or without hirsutism. Lumezi BG at al. [17] study found, Insulin resistance in 14.8% women and diabetes in 1.4% women in hirsutism patients.

Serum TSH: All five patients of hirsutism showed normal level of TSH, and no correlation was found between serum TSH and Hirsutism. The finding tallied with report of Krishnendra Varma at al. [18] in 30 patients thirty patients where TSH level was raised in 2(6.7%) and normal in 28(93.3%) patients.

All data of patients are given in Table 1.

5. CONCLUSION

Ultrasonographic (USG) study revealed positive correlation between PCOS and Hirsutism patients. Hirsutism patients were found to have higher level of 17-OHP, serum testosterone, serum insulin and higher ratio of LH:FSH, one or more at a time suggesting strong correlation between elevated levels of these hormones and hirsutism. Present study could not establish any meaningful correlation between the level of DHEAS, serum prolactin, serum cortisol, and serum TSH.

CONSENT AND ETHICAL APPROVAL

The study protocol was reviewed and approved by the Sarvajanik Clinical Research Ethics Committee at Mehsana (Ref. SCREC/2019-20/07). As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Sachdeva S. Hirsutism: evaluation and treatment. Indian journal of dermatology. 2010 Jan;55(1):3.
2. Wankhade vh, shah vh, tomar ss, singh rp. Clinical and Investigative Study of Hirsutism. Journal of Clinical & Diagnostic Research. 2019;13(6).
3. Baig T, Aman S, Nadeem M, Kazmi AH. Quality of life in patients of hirsutism. Journal of Pakistan Association of Dermatologists. 2014;24(3):217-23.
4. Sharma NL, Mahajan VK, Jindal R, Gupta M, Lath A. Hirsutism: Clinico-investigative profile of 50 Indian patients. Indian journal of dermatology. 2008;53(3):111.
5. Sachdeva S. Hirsutism: evaluation and treatment. Indian journal of dermatology. 2010 Jan;55(1):3.
6. Carmina E. Prevalence of idiopathic hirsutism. European journal of endocrinology. 1998;139(4):421-3.
7. Archer JS, Chang RJ. Hirsutism and acne in polycystic ovary syndrome. Best Practice & Research Clinical Obstetrics & Gynaecology. 2004;18(5):737-54.
8. Puri N. Comparative study of diode laser versus neodymium-yttrium aluminum: garnet laser versus intense pulsed light for the treatment of hirsutism. Journal of cutaneous and aesthetic surgery. 2015;8 (2):97.

9. Jansy R, Manickaam N, Kandasamy M, Gopalan K, Revathi D. Efficacy of long pulsed ND: YAG laser in the treament of hirsutism. IP Indian J Clin Exp Dermatol. 2018;4(2):85-9.
10. Ansarin H, Aziz-Jalali MH, Rasi A, Soltani-Arabshahi R. Clinical presentation and etiologic factors of hirsutism in premenopausal Iranian women. Arch Iran Med. 2007;10:7-13.
11. Hassa H, Tanir HM, Yildirim A, Senses T, Eskalen M, Mutlu FS. The hirsutism scoring system should be population specific. Fertility and sterility. 2005;84 (3):778-80.
12. Tirgar-Tabari S, Sharbatdaran M, Manafi-Afkham S, Montazeri M. Hyperprolactinemia and hirsutism in patients without polycystic ovary syndrome. International Journal of Trichology. 2016;8(3):130.
13. Chhabra S, Gautam RK, Kulshreshtha B, Prasad A, Sharma N. Hirsutism: A Clinico-investigative study. International journal of trichology. 2012;4(4):246.
14. Hassa H, Tanir HM, Yildiz Z. Comparison of clinical and laboratory characteristics of cases with polycystic ovarian syndrome based on Rotterdam's criteria and women whose only clinical signs are oligo/anovulation or hirsutism. Archives of gynecology and obstetrics. 2006;274(4): 227-32.
15. Sharma NL, Mahajan VK, Jindal R, Gupta M, Lath A. Hirsutism: Clinico-investigative profile of 50 Indian patients. Indian journal of dermatology. 2008;53(3):111.
16. Maroulis GB, Manlimos FS, Garza RO, Abraham GE. Serum cortisol and 11-desoxycortisol levels in hirsute premenopausal women. Obstetrics and gynecology. 1976;48(4):388-91.
17. Lumezi BG, Berisha VL. Investigation of body mass index, insulin resistance and diabetes in patients with hirsutism. Advances in Dermatology and Allergology/ Postępy Dermatologiii Alergologii. 2020;37(1).
18. Varma K, Aujla SS. A Study of Hormonal profile in Hirsutism patients-A prospective observational study in a Tertiary Care Hospital. Indian Journal of Clinical and Experimental Dermatology. 2016;2(2): 58-61.

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle4.com/review-history/73733