

Etiology of Hirsutism in Women Referring to Endocrinology Clinic in Ahwaz

Hajieh Shahbazian,¹ Mehrnoosh Zakerkish,^{*2} Neda Heidari-Manesh³

- 1- Department, Endocrinologist. Diabetes Research Center, Ahwaz University of Medical Science, Ahwaz, Iran
- 2- Department, Fellowship of Endocrinology, Diabetes Research Center, Ahwaz University of Medical Science, Ahwaz, Iran
- 3- General Practitioner

Article information	Abstract
<p>Article history: Received: 1 Oct 2011 Accepted: 2 Dec 2011 Available online: 5 Nov 2012 ZJRMS 2013; 15(4): 69-72</p> <p>Keywords: Hirsutism Polycystic Ovary Syndrome Idiopathic Hirsutism</p> <p>*Corresponding author at: Department, Fellowship of Endocrinology, Diabetes Research Center, Ahwaz University of medical Science, Iran. E-mail: zakerkishm@yahoo.com</p>	<p>Background: This study is carried out aiming to determine the prevalence of various causes of hirsutism in patients referred to the endocrine clinic of Golestan Hospital in Ahwaz.</p> <p>Materials and Methods: In a cross-sectional study, 520 patients suffered from hirsutism whiting the age range of 10-50 year old participated based on Ferriman-Gallwey hirsutism classification system.</p> <p>Results: Out of 520 patients under study, 274 ones (52.7%) had PCO, 176 ones (33.8%) suffered from idiopathic hirsutism, 24 persons (4.6%) had hyperprolactinemia, 22 persons (4.2%) had hirsutism caused by drugs consumption, 11 ones (2.1%) had hypothyroidism, 9 patients (1.7%) had cushing as well as 3 persons (0.57%) having Late Onset Congenital Adrenal Hyperplasia (LOCAH) and 1 person (0.19%) had ovarian tumor.</p> <p>Conclusion: Results of this study show that PCO and idiopathic hirsutism constitute totally 86% of hirsutism causes.</p>

Copyright © 2013 Zahedan University of Medical Sciences. All rights reserved.

Introduction

Hirsutism is the abnormal growth of terminal hair in women with a male pattern caused by excessive production of androgens or excessive body response to androgen that will seize 5-10 percent of women [1, 2].

Cutaneous symptoms which are commonly associated with hirsutism consist of acne, acanthosis nigricans and baldness with male pattern. The patients may display virilization symptoms including deepened voice caused by hypertrophy of vocal cords, breast atrophy, increased muscle mass, amenorrhea and clitoromegaly [3]. Increased androgen level in women is resulted by an increased production of testosterone by adrenal glands or ovaries [4, 5].

Ovarian causes of hyperandrogenism include polycystic ovary (PCO), hyperthecosis and ovarian tumors among which PCO constitute more than 70% of hirsutism causes.

Adrenal causes of hyperandrogenism consist of Cushing syndrome, androgen-producing tumors (including adenoma and carcinoma) and Congenital Adrenal Hyperplasia (CAH). All other causes of hirsutism involves in hyperprolactinemia, acromegaly, hypothyroidism as well as medicinal and idiopathic causes.

Idiopathic hirsutism is known by normal levels of androgen and normal ovarian function and has been reported by 23 percent of the patients. Hirsutism is occurred in these women as a result of impairment in the peripheral activities of androgen [7]. This condition is spread for a short period after puberty with a slow speed.

Considering the progressive increase of hirsutism cases referred to endocrinology and beauty clinics as well as financial pressure and stress of the patients, this study was conducted aiming to investigate the prevalence of various causes of hirsutism in the patients referred to endocrinology clinic at Golestan Hospital in Ahwaz within 2004-2006.

Materials and Methods

In this cross-sectional study, 520 patients suffered from hirsutism with an age range of 10-50 year old referred to endocrinology clinic at Golestan Hospital in Ahwaz within 2004-2006 as eligible for such investigation participated in the study. Conditions for participation in the study consist of having hirsutism based on Ferriman-Gallwey hirsutism classification system, cooperation and consent of the patients and their parents for conducting hormonal tests and making necessary follow-ups. The patients had no other acute or chronic disease and they were taking no drugs during the study period. Pregnant and lactating women were eliminated from the study.

A questionnaire was filled out for all the subjects including the patient's age, age at onset, duration of disease, menopausal status, symptoms and clinical signs such as acne, galactorrhea, hair loss with a male pattern, astray and acanthosis nigricans.

The patient's menstrual status was divided into various regular (menstrual cycles between 35-21 days) and irregular cycles based on the patient's history and her

menstrual status until the examination time. Irregular menstrual cycles was applied to oligomenorrhea (menstrual bleeding at intervals over 35 days), polymenorrhea (menstrual bleeding at intervals of less than 21 days) or amenorrhea (absence of menstrual periods for 12 months or more) [8]. Fasting blood tests were taken at early follicular phase of the menstrual cycle (3 rd- 4 th day of menstruation) in the patients with spontaneous menstruation and at the first opportunity, in the patients who had no menstrual, in order to measure Follicle Stimulating Hormone (FSH), Luteinizing Hormone (LH), Prolactin (PRL), Total Testosterone, Dehydroepiandrosterone Sulfate (DHEA-S), 17-hydroxy progesterone (17.OH.P) and Thyroid Stimulating Hormone (TSH).

For rejecting Cushing syndrome, Overnight Dexamethasone Suppression Test and Dexamethasone Low Dose Test were used.

A 17-OH-P less than 2 µg/l was normal and in case it is higher than 8 µg/l, CAH diagnosis would be confirmed. A Cosyntropine test with synthetic ACTH 250 µg was conducted on the patients with 17-OH-P between 2 to 8 to diagnose late-onset CAH and 17-OH-P was measured in 0, 30 th and 60th minutes; in case it was higher than 10 µg/l, CAH diagnosis would be confirmed. Hyperprolactinemia would be diagnosed considering prolactin serum higher than 2 times of normal level after at least two times repetition of the test. Hypothyroidism with high TSH and idiopathic hirsutism was diagnosed considering normal testing and regular menstrual cycles. If DHEAS > 7000 µg/dl and there is a positive CT-scan, adrenal tumor would be diagnosed, and if testosterone level is more than 200 µg/dl and ultrasound revealed a tumor in the ovary, ovarian tumor diagnosis would be confirmed. In this study, PCO diagnosis was established based on the Rotterdam criteria [9].

The data collected in this investigation were analyzed by SPSS-15 software using chi-square test to examine the relationship between the variables and t-test in order to compare means of both variables of the study. P<0.05 was considered as significant.

Results

The mean age of 520 patients under study was 21.8 year (age range of 10-50). Most of the patients (76.8%) were in the age rang 15-30 at the time of diagnosis. Out of 520

patients as the subjects of the study, 274 cases (52.69%) has PCO and 176 cases suffered from idiopathic hirsutism. The prevalence of various causes of hirsutism in the patients is shown in table 1.

Acne is the most common symptom of hyperandrogenism (66.3%) in the patients under the present study. Menstrual disorders in 57.5% of the patients and loss of hair in male form in 3/2727.3% of the patients were found as associated symptoms. Acanthosis nigricans (AN), galactorrhea and istria were observed respectively in 9%, 8.6% and 4% of the patient. Menstrual cycles was regular in 42.5% of the patients, while 57.5% of them had menstrual disorders including oligomenorrhea (39.6%), amenorrhea (12.8%), hypermnorrhea (3.07%) and polymenorrhea (1.9%). The most common associated symptoms as divided by hirsutism causes were mentioned in table 2. The average duration of hirsutism risk was 2.9 years in all the patients. The minimum duration of hirsutism was calculated as 1 year in ovarian tumor and the maximum one was 4.7 years in PCO. Duration of hirsutism risk was estimated as 3.9 years in hypothyroidism, 3.8 years in idiopathic, 2.7 years in hyperprolactinemia and about drugs consumption, Cushing and CAH, each was estimated as 1.2 year.

In the group with PCO, 9.11% of the patients had regular menstrual. Furthermore, 21% of the patients with PCO had high prolactin but less than 2 times of normal level. Sixty-four percent of the total patients with PCO had a LH/FSH ration above 2 and the other 34% had a LH/FSH ration above 3.

Table 1. The prevalence of various causes of hirsutism in the patients referred to endocrine clinic during 2004-2006

Causes of Hirsutism	N (%)
PCO	274(52.69)
Idiopathic	176(33.84)
Hyperprolactinemia	24(4.61)
Medications	22(4.23)
Hypothyroidism	11(2.11)
Cushing	9(1.73)
CAH	3(0.57)
Ovarian tumor	1(0.19)
Adrenal tumor	0(0)
Total	520(100)

Table 2: prevalence percentage of associated symptoms in each group of patients with hirsutism as referred to endocrinology clinic during 2004-2006

Causes of Hirsutism	Number	Associated symptoms				
		Galactorrhea	Hair loss	Acne	Istria	Acanthosis nigricans
PCO	274	18(6.38)	68(24.81)	192(70.07)	12(4.37)	44(16.05)
Idiopathic	176	0(0)	38(21.59)	120(68.18)	0(0)	0(0)
Hyperprolactinemia	24	23(95.84)	7(29.16)	9(37.5)	0(0)	0(0)
Medications	22	0(0)	18(81.18)	12(54.54)	0(0)	0(0)
Hypothyroidism	11	3(27.27)	9(81.18)	5(55.55)	0(0)	0(0)
Cushing	9	1(11.11)	2(22.22)	4(44.44)	8(88.88)	1(11.11)
CAH	3	0(0)	0(0)	1(33.33)	1(33.33)	2(66.66)
Ovarian tumor	1	0(0)	0(0)	1(100)	0(0)	0(0)
Adrenal tumor	0	0(0)	0(0)	0(0)	0(0)	0(0)

Discussion

Hirsutism is mostly suggesting an abnormal growth of body hair and it is rarely indicative of more serious underlying condition that would be required to be diagnosed timely and to be treated aggressively. Such status should be distinguished from hypertrichosis which refers to an increased hair growth independent of androgen and mostly vellus hairs. Severity of hirsutism in different parts of the body is different in various individuals depending on the elevated androgen level or increased sensitivity of hair follicles to androgen levels. Hirsutism may be associated with overweight, resistance to insulin, polycystic ovary syndrome and infertility. The results of this study show that PCO (53%) and then idiopathic hirsutism (23%) constitute common causes of hirsutism and they together include totally 86% of hirsutism causes. All other causes in terms of prevalence are respectively hyperprolactinemia, hypothyroidism, Cushing syndrome, CAH and ovarian tumor. In all other investigations, PCO and idiopathic causes were also common about 85% in hirsutism patients that are consistent with the results of our study [10].

In an investigation carried out by Farnaghi et al. on 110 Iranian patients with hirsutism in Tehran; PCO was found in 49% of cases [8]. In a similar study conducted by Ansarin et al on 790 Iranian patients suffered from hirsutism in Iran, PCO was known respectively as the most common causes of hirsutism in 62.5% of the patients and Idiopathic type in 35.2% of the patients.

In this study, CAH and hyperprolactinemia were reported respectively in 0.4% and 0.13% of cases. Hormonal tests showed disorders in 32.5% of the patients. Acne in 70% of patients, menstrual disorders in 38.6% and hair loss with androgenic pattern in 21.3% of them were the most common associated symptoms in the patients suffered from hirsutism. Meanwhile, the results of our study are consistent with that of two above-mentioned investigations, in respect of hirsutism causes and the prevalence of the associated symptoms. In an investigation conducted by Gattee et al in UAE, PCO was found in 92% out of 104 patients with hirsutism [11].

References

- McKnight E. The prevalence of hirsutism in young women. *Lancet* 1964; 1(7330): 410-3.
- Ferriman D, Gallwey JD. Clinical assessment of body hair growth in women. *J Clin Endocrinol Metab* 1961; 21: 1440-7.
- Hunter MH, Carek PJ. Evaluation and treatment of women with hirsutism. *Am Fam Physician* 2003; 67(12): 2565-2572.
- Rittmaster RS. Hirsutism. *Lancet* 1997; 349(90460): 191-5.
- Rosenfield RL. Hirsutism. *N Engl J Med* 2005; 353: 2578-88.
- Leung AK, Robson WL. Hirsutism. *Int J Dermatology* 1993; 32(11): 773-7.
- Azziz R, Carmina E, Sawaya ME. Idiopathic hirsutism. *Endocr Rev* 2000 ;(4): 347-62.
- Farnaghi F, Seyrafi H, Zarrinpour N. Descriptive study of 110 patients with hirsutism in Tehran Razi Hospital during the years 2000-2001. *Dermatol Cosmet* 2002; 6(1): 21-25.
- Ansarin H, Aziz-Jalali MH, Rasi A, et al. Clinical presentation and etiologic factors of hirsutism in premenopausal Iranian women. *Arch Iran Med* 2007; 10(1): 7-13.
- De Berker DAR, Messenger AG, Sinclair RD. Disorders of hair. In: Burns T, Breathnachs S, Cox N and Griffiths C. *Rook's textbook of dermatology*. 7th ed. Oxford: Blackwell Science; 2004.
- Gattee OB, Al Attia HM, Salama IA. Hirsutism in the United Arab Emirates: A hospital study. *Postgrad Med J* 1996; 72(845): 168-171.

In the study performed by Mithal et al on 60 patients with hirsutism in India, PCO was seen in 75% of the subjects [12]. In all other researches, PCO prevalence has been reported between 37.3 and 78 percent [3, 11-13].

In the present study, regular menstrual was observed in 10% of the cases with PCO. Thus, it is necessary to take care of clinical and paraclinical symptoms for PCO diagnosis. More than half of our patients suffered from PCO and rather than the problems mentioned in this study, such patients are exposed to overweight, diabetes, hyperlipidemia, hypertension, coronary artery diseases and metabolic syndrome.

In this investigation, we have not examined the patients' hirsutism degrees, BMI, impaired glucose tolerance (IGT), diabetes and their metabolic status and given the importance of such issues, they are suggested to be taken into consideration in the next studies.

The results achieved in our investigation show that PCO and idiopathic hirsutism constitute totally 86% of the hirsutism causes in the group under the study. As a result, a patient referring as suffered from hirsutism should be examined firstly for these two diseases. The patients with PCO and CAH will usually refer to physicians at the ages of puberty and the others with idiopathic hirsutism and Cushing syndrome will refer at late second decade and early third decade of their life.

Acknowledgements

This paper is a part of doctoral thesis prepared by Ms. Dr. Neda Heydarimanesh to earn Ph.D. degree in general medicine approved at Jondishapour University of Medical Sciences in Ahwaz.

Authors' Contributions

All authors had equal role in design, work, statistical analysis and manuscript writing.

Conflict of Interest

No conflict.

Funding/Support

Ahwaz university of medical science.

12. Mithal A, Ammini AC, Godbole MM, et al. Late-onset adrenal hyperplasia in North Indian hirsute women. *Horm Res.* 1988; 30(1): 1-4.
13. Zargar AH, Wani AI, Masoodi SR, et al. Indian subcontinent. *Fertil Steril* 2002; 77(4): 674-678.

Archive of SID

Please cite this article as: Shahbazian H, Zakerkish M, Heidari-Manesh N. Etiology of hirsutism in women referring to endocrinology clinic in Ahwaz. *Zahedan J Res Med Sci (ZJRMS)* 2013; 15(4): 69-72.