

AN AETIOLOGICAL STUDY OF MODERATE TO SEVERE HIRSUTISM

Lamees Mahmood Malik¹, Khawar Khursheed², Tahir Saeed Haroon³, Mahmood Ali Malik⁴

ABSTRACT

Objective: Hirsutism is a common disorder of females. Most cases are idiopathic, however some studies claim polycystic ovarian syndrome to be the commonest cause. The objective of the present study was to evaluate the etiology of moderate to severe hirsutism and to devise a rational diagnostic approach in these patients depending upon age, severity of the problem and other clinical findings.

Methodology: Seventy four consecutive patients with moderate to severe hirsutism (i.e. Ferriman and Gallwey score of 7 and above) were enrolled and recorded on a standard Proforma. All patients were assessed clinically with particular emphasis on signs and symptoms of virilisation. Hormonal investigation as well as abdominal and pelvic ultrasonography for adrenals and ovaries was done in all patients.

Results: Of the 74 patients 35 (47.3 %) were labeled as idiopathic hirsutism, while 33 (44.6%) were diagnosed as polycystic ovary syndrome. Other causes identified were hypothyroidism (4%), Cushing's syndrome (2.7%) and congenital adrenal hyperplasia (1.3%). Majority of patients belonged to the age group 21-25 years.

Conclusion: The commonest cause of hirsutism in our study was idiopathic (47.3%). This was followed by PCOS which accounted for 44.6% of patients.

KEYWORDS: Hirsutism, Polycystic ovary syndrome, Virilisation.

Pak J Med Sci April 2007 Vol. 23 No. 2 167-171

INTRODUCTION

Hirsutism, defined as occurrence of hair in a woman in the characteristic distribution for adult males, is a common disorder. Incidence ranges between 1% of all women to 30% of infertile females. Different races vary in the amount of facial and body hair. Orientals,

blacks and Native Americans have less body hair than white people. Even among the white race, hair growth is greater in those of Mediterranean origin. Women from our part of the world are also considerably hairier.

Hirsutism may be idiopathic, i.e. due secondary to increased responsiveness of the hair follicles to normal circulating levels of androgens, or it may result from an excess of androgens and other hormones. The source of the excess androgens may be either, the ovaries, the adrenals or increased peripheral conversion of weak androgenic hormones to more potent ones. More than 90% of women with hirsutism have the relatively benign conditions of polycystic ovary disease (PCOS) or idiopathic hirsutism (IH). However other more sinister causes of hirsutism may include adrenal or ovarian neoplasms.¹

The investigations needed to thoroughly evaluate the patients for all possible causes of hirsutism are expensive and time consuming.

1. Lamees Mahmood Malik
2. Khawar Khursheed
3. Tahir Saeed Haroon
- 1-3: Department of Dermatology,
Mayo Hospital, Lahore - Pakistan.
4. Mahmood Ali Malik
Lahore Medical and Dental College, Lahore

Correspondence

Lamees Mahmood Malik
44, Lakshmi Mansion,
The Mall,
Lahore - Pakistan.
E-mail: shahdham@yahoo.com

- * Received for Publication: September 8, 2005
- * Revision Received: November 20, 2006
- * Revision Accepted: January 28, 2007

It is therefore neither possible nor necessary to perform all these tests in all patients. The present study was undertaken with a view to establishing the common causes of hirsutism in females presenting with moderate to severe disease. The ultimate significance of this exercise would be to develop practical guidelines for management of these patients.

PATIENTS AND METHODS

Study Population: A total of 74 females presenting with hirsutism at the out patients department of Mayo Hospital, Lahore, and private practices were enrolled and studied. All cases were recorded on a standard Pro forma after taking informed consent.

Inclusion Criteria: Females of any age group with moderate to severe hirsutism. Ferriman and Gallwey score of 7 or more,² were included in this study.

Exclusion Criteria: Patients with mild hirsutism (Ferriman and Gallwey score less than 7), those on drugs known to produce hirsutism (e.g. corticosteroids, androgens, cyclosporine, minoxidil, phenytoin, diazoxide, etc) and pregnant ladies were excluded from the study.

Clinical Assessment: A detailed medical history and physical examination was carried out in all patients.

History: Specific points recorded in history included: age of onset, duration, rate of progression of disease, marital status of patient and presence of symptoms of virilisation (i.e. deepening of voice, thinning of scalp hair, increased muscularity, increased sebum production, acne, decreased breast size, oligomenorrhoea). Family history of the disease and history of psychiatric illness and its treatment were also specifically sought for.

Physical Examination: A thorough physical examination with specific emphasis on signs of virilisation (including frontal baldness, loss of female body contours, increased muscularity, acne, clitoromegaly, and atrophy of breast) was done in all patients..

Assessment of degree of hirsutim: This was done by means of Ferriman and Gallwey scoring

system.² This system grades hair growth over nine body areas from 1-4 (Table-I). A cut off score of 7 was taken as presence of significant hirsutism. A score below 7 was regarded as mild hirsutism.

Table-I: Ferriman and gallwey scoring system

Site	Grade	Definition
Upper lip	1	A few hairs at outer margin
	2	A small moustache at outer margins
	3	A moustache extending halfway form outer margin
	4	A moustache extending to midline
Chin	1	A few scattered hair
	2	Scattered hairs with small concentrations
	3	Complete cover, light
	4	Complete cover, heavy
Chest	1	Circumareolar hairs
	2	With midline hair in addition
	3	Fusion of these areas, with three-quarter cover
	4	Complete cover
Upper back	1	A few scattered hair
	2	Rather more, still scattered
	3	Complete cover, light
	4	Complete cover, heavy
Lower back	1	A sacral tuft of hair
	2	With some lateral extension
	3	Three quarter cover
	4	Complete cover
Upper abdomen	1	A few midline hairs
	2	Rather more, still midline
	3	Half cover
	4	Full cover
Lower abdomen	1	A few midline hairs
	2	A midline streak of hair
	3	A midline band of hair
	4	An inverted V-shaped growth
Upper arm	1	Sparse growth < three quarters
	2	More than this: cover still incomplete
	3	Complete cover, light
	4	Complete cover, heavy
Thigh	1	Sparse growth < three quarters
	2	More than this: cover still incomplete
	3	Complete cover, light
	4	Complete cover, heavy

Investigations: The levels of serum testosterone, sex hormone binding globulins, luteinising hormone, follicle stimulating hormone, dehydroepiandrosterone sulphate, prolactin, cortisol and 17-hydroxyprogesterone and abdominal and pelvic ultrasound for adrenals and ovaries were carried out in all patients. Thyroid function tests, growth hormone level, X ray skull, CT brain and CT abdomen were carried out in selected patients only.

RESULTS

Seventy four patients between 16-35 years suffering from moderate to severe hirsutism were enrolled for this study. Mean age was 23 years (SD±5). Majority of patients belonged to the age group 21-25 years (43.7%), followed by 16-20 years (33.78%) between 26-30 years (20.27%) and between 31-35 years (2.7%). The age at which the disease first appeared ranged from 10-24 years with a mean age of onset of 18 years (SD±3). Duration of disease ranged from 1-15 years with a mean of 5 years (SD±5). Progression of the disease was gradual in 80% of patients whereas there was rapid progression in the remaining 20%. Fifty three patients (71%) were unmarried where as 21 patients (29%) were married. A positive family history was obtained in 46.7% of patients.

Signs and symptoms of virilisation: The most common symptom was thinning of scalp hair (73%). Other symptoms included increased sebum production in 53%, oligomenorrhoea in 45%, acne in 40%, increased muscularity and breast atrophy in 2.7% patients each. The signs of virilisation observed were acne in 36%, frontal baldness in 13%, voice changes in 2.7% and loss of female body contours in 2.7% of patients.

Obesity: 36.6 % were clinically obese (BMI >30). Out of these 85% showed PCOS on ultrasound. Both patients with Cushing's disease were obese. Only 2 patients (7.4%) with I H were obese.

Ferriman and Gallwey Score: The scores ranged from 8-26 with a mean score of 14 (SD±4). Majority of patients had scores between 11-15

(55%). Face scored the maximum while the chest and abdomen were the next common sites.

Lab Investigations: Testosterone levels were elevated in 56 patients (75.6%). Out of these 33 had PCOS and 22 patients had IH. The LH/FSH ratio was elevated (>2) in 33 patients. All of them had PCOS. Serum Prolactin was increased in 8 patients. Of these three patients had hypothyroidism, three patients had PCOS, and two had IH. Two patients had elevated serum cortisol levels. One patient had elevated 17-OH progesterone levels and DHEAS. This patient was diagnosed as having delayed onset congenital adrenal hyperplasia

Imaging Techniques: Ultrasonographic findings of the patients are shown in Table-II showing polycystic ovaries as the major ultrasonographic abnormality. Only one patient showed bilateral hyperplasia of the adrenals on CT abdomen.

Causes of hirsutism: In our study the commonest cause of moderate to severe hirsutism (as defined by F & G scores of 7 or above) was IH (47.3%). This was followed by PCOS found in 44.6%. Other less frequent causes identified were hypothyroidism (4%), Cushing's syndrome (2.7%) and congenital adrenal hyperplasia (1.3%).

DISCUSSION

Hirsutism is a common endocrine disorder responsible for a lot of anxiety amongst young women. Its spectrum varies from mild to severe. The severity is assessed by semi-objective scoring system (Ferriman & Gallwey score); the use of which allows the systematic follow up of the results of treatment. An increase in serum androgen levels or an

Table-II: Ultrasonographic findings of patients n = 74

Findings	n (%)
Normal	40 (54%)
Polycystic ovaries	33 (44.5%)
Unilateral cysts	17 (22.9%)
Bilateral cysts	7 (9.4%)
Bilaterally enlarged ovaries with multiple cysts	9 (12.1%)
Adrenal pathology on ultrasound	1 (1.3%)

increased turnover of androgens can be detected in most cases. The abnormal metabolism of androgens in the hair follicles may result in excessive stimulation of hair growth. Rarely a clearly defined pathological entity such as congenital adrenal hyperplasia or an androgen secreting adrenal or ovarian tumour is the cause of the androgen excess.¹ In majority of cases however, there is mild androgen excess causing hirsutism with or without disruption of regular ovulation and in the absence of virilisation.

There is controversy surrounding the mechanism involved in development of this mild androgen excess and the sequence of events that lead to the commonly associated disorder for which the terms IH and PCOS will be used. These are probably closely related clinical disorders with PCOS representing a more severe disorder than IH.³ Unfortunately there is no consensus on their definitions. However, for our study the following definitions were used:

Idiopathic Hirsutism: A condition characterised by the occurrence of hirsutism in a woman who continues to menstruate and ovulate regularly. IH does not imply the absence of cystic changes within the ovaries, detected by ultrasonography.⁴

Polycystic Ovary Syndrome: This disorder is characterised by the disruption of normal menstrual pattern, frequently associated with oligomenorrhoea in patients who may also be hirsute and/or obese. Ultrasound and laparoscopic exam usually reveal the typical appearance of cystic lesions in the ovaries. Undoubtedly these terms are not entirely satisfactory. A recent international meeting which addressed the problem failed to arrive at a generally accepted definition.⁵

In the present study 74 patients presented

Table-III: Comparison of IH and PCOS

	IH	PCOS
Oligomenorrhoea	0%	100%
Obesity	7.4%	100%
F&G score (mean)	12	21
Raised testosterone levels	32%	100%
LH/FSH ratio >2	0%	100%
Polycystic ovaries on USG	0%	100%

with moderate to severe hirsutism (Ferriman and Gallwey score of 7 or more). Majority of the patients were young girls (mean age 23 years). Hirsutism in this age group is generally of benign nature.⁶ Our study confirmed this view.

Seventy one percent of the patients were unmarried whereas 29% were married. This however, does not mean that hirsutism is less common in married females. This may only reflect that unmarried girls are more conscious about problems like hirsutism, hence seek medical attention earlier. In majority of patients the duration of the disease was between 1 to 5 years with a gradual progression of the disease. These findings again reflect the benign nature of the disease.

In our study a positive family history was obtained in 37% of patients. More than half of them (52%) inherited the problem from the paternal side i.e. paternal grandmother or aunts were hirsute. This single observation was not however, backed by any reference in the literature. An increased incidence of hirsutism has been seen in female relatives of hirsute women.⁷ This positive family history is seen both in cases of IH as well as in cases of hirsutism due to underlying disorder. This tendency to familial clustering may have a genetic basis e.g. congenital adrenal hyperplasia is linked to major histo-compatibility complex and PCOS has also a very strong family relationship. Stress has also been implicated as an etiological factor for hirsutism. It is believed to be both a cause and a result of hirsutism.⁸

As IH and PCOS were the two major causes identified, a comparison of the two showed the following differences (Table-III). Oligomenorrhoea was present in all patients with PCOS while it was not a feature of IH. All patients with PCOS were obese while only 7.4% patients of IH were obese. LH/FSH ratio was greater than two in all PCOS patients while it was normal in all IH patients. Here it is important to mention that PCOS was not diagnosed merely on the basis of presence of polycystic ovaries on ultrasound. It has been mentioned that IH does not imply absence of

polycystic ovaries.⁴ Polycystic ovaries may be present in up to 20% of normal females.⁴

Comparing our study with similar studies i.e. by Sheikh et al and Moran et al, there is a difference in the percentage of patients of PCOS and IH. In the study by Sheikh *et al*, PCOS was diagnosed in 36.5% and IH in 24.3%.⁹ The study by Moran *et al* showed PCOS in 53% and IH in 25% patients.¹⁰ The diagnostic criteria for PCOS and IH were not mentioned in both these studies and the difference could be explained on the basis of different criteria used.

The present study highlights that the common causes of hirsutism in the age group 15-25 years are benign. A rational diagnostic approach should therefore be made depending upon the age, severity of the problem and other clinical findings. In this way unnecessary investigations, which are both costly and time consuming, can be avoided.

REFERENCES

1. Derksen J, Nagesser SK, Meindets AE. Identification of virilising adrenal tumours in hirsute women. *N Engl J Med* 1994;331:968-73.
2. Ferriman DM, Gallwey JD. Clinical assessment of body hair growth in women. *J Clin Endocrinol Metab* 1961;21:144-7.
3. Dawber RPR, de Berker D, Wojnarowska F. Disorders of hair. In: champion RH, Burton JL, Ebling FJG, eds. *Rook/Wilkinson/Ebling Textbook of Dermatology*. Oxford: Blackwell scientific 1992;691-712.
4. Polson DW, Adam J, Wadsworth J, Franks S. Polycystic ovaries – a common finding in normal women. *Lancet* 1998;1:870-2.
5. Erkkola R, Ruutianen K. Hirsutism: definition and etiology. *Ann Med* 1990;22:99-103.
6. McKenna TJ. Hirsutism and polycystic ovary syndrome. In: grossman A, ed. *Clinical Endocrinology*. London: blackwells scientific 1992;691-712.
7. Hull MGR, Glazener CMA, Kelly NJ. Population study of causes, treatment and outcome of infertility. *BMJ* 1985;37:127-34.
8. Barth JH, Catalan J, Cherry CA. Psychological morbidity in women referred for treatment of hirsutism. *J Psychosom Res* 1993;37:615-9.
9. Sheikh MZ, Birjani S, Khan N. Problem of hirsutism at Karachi. *Specialist (Pak J Med Sci)* 1998;14:309-14.
10. Moran C, Tapia MC, Hernandez E. Etiological review of hirsutism in 250 patients. *Arch Med Res* 1994;25:311-4.