ORIGINAL RESEARCH PAPER

Volume-8 | Issue-8 | August - 2019 | PRINT ISSN No. 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ASSESSMENT OF HIRSUTISM BY MFG SCORE AND ASSOCIATION OF HIRSUTE WOMEN WITH PCOS

Obstetrics and Gynaecology

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ABSTRACT

Introduction: Hirsutism can be assessed by Modified Ferriman Gallwey (mFG) score. mFG score quantifies the amount of hair growth on various androgen-dependent body areas. Polycystic ovary syndrome (PCOS) is a hormonal disorder common among women of reproductive age. The present aim of this study is to assess hirsutism by mFG score and its correlation with other clinical features of women.

Materials and Methods: A total of 140 patients were selected to include in this prospective study during the period of September 2017 to January 2019. Those with mFG score ≥ 8 were considered as hirsutism and those with mFG score <8 were considered as non hirsute patients. All clinical features and investigations of studied population were entered into excel sheet and evaluated.

Results: Among 140 patients were presented with complaints of hirsutism 57 (40.7%) diagnosed with PCOS after being investigated. The mean age of PCOS women with hirsutism was 31.2±6.5. mFG score ≥ 8 were observed in 15 (26.3%) patients out of 57 PCOS women, whereas, remaining 42 (73.6%) PCOS women had mFG score < 8. Most of the women with mFG score ≥ 8 were obese (86.6%) and waist circumference ≥ 88 (86.6%). Around 40% of women with mFG sore < 8 were obese and with waist circumference < 88. BMI analysis has showed statistically significance between these two groups.

Conclusion: Both hirsutism and PCOS can be treated successfully when diagnosed at younger age. Hirsutism should be assessed in depth by clinically, especially moderate and severe hirsutism and also by investigations to find out the exact cause behind it.

KEYWORDS

Hirsutism, PCOS.

INTRODUCTION:

Polycystic ovary syndrome (PCOS) is a hormonal disorder common among women of reproductive age. Women with PCOS will have hormonal imbalance and insulin resistance which is responsible for various clinical presentations [1,2].

PCOS can be diagnosed if women have any two of the following criteria [3]: 1.Irregular menstrual periods, 2.excesss male hormone (androgen) levels, 3.polycystic ovaries – excess production of male hormones is responsible for abnormal hair growth, hair loss from the head (male pattern balding), acne, oily skin.

PCOS also associated with dysfunctional uterine bleeding, infertility, weight gain. Women with PCOS have been reported to have an increased risk of developing type 2 diabetes mellitus, and are associated with increased risk of uterine cancer, high cholesterol and heart disease.

PCOS may have a mutlifactorial etiology involving genetics, environmental factors as well as foetal and childhood exposures. PCOS is a commonest endocrinal abnormality among women if reproductive age group, affecting 4-8% of women [4]. Women consulting infertility clinics with anovulatory infertility, around 90-95% of them are associated with this syndrome [5].

PCOS is a quite prevalent reproductive and metabolic disorder with variable phenotypes. PCOS is still an enigmatic condition, pathophysiology is not completely understood. Hirsutism is unwanted, excessive amounts of stiff, thick, male pattern hair growth, usually self-diagnosing condition, which is a quite bothersome among women. Hirsutism is caused by an excess of male hormones called androgens. The excessive hair in hirsutism is usually thick and pigmented and develops at face, neck, chest, tummy, lower back, buttocks, thighs.

Hirsutism can be assessed by Modified Ferriman Gallwey (mFG) score. mFG score quantifies the amount of hair growth on various androgen-dependent body areas [6]. Disadvantage of mFG is, it is impractical for daily practice and also affected by a patient's recent waxing, shaving or other depilation.

The Modified Ferriman Gallwey score (mFG score) assess density of terminal hair at nine different body sites under androgen effect from 0 (absence of terminal hairs) through 4 (extensive terminal hair growth) and concluded that hirsutism was represnted by a score of 8 or more [7].

The present aim of this study is to assess hirsutism by mFG score and its correlation with other clinical features of women.

MATERIALS AND METHODS:

Female patients presented with abnormal growth of hair at department of dermatology, were subsequently referred to department of Gynaecology for assessment of PCOS and other causes of Hirsutism. A total of 140 patients were selected to include in this prospective study during the period of September 2017 to January 2019. Patients consent has taken before doing this study.

Details pertaining to age, age of onset of puberty, weight, height, history of weight gain, acne, menstrual history, loss of normal female body contour, drug history, diabetes history were recorded. Complete physical and systemic examination done and findings were noted. Abnormal hair growth was assessed by mFG score. Those with mFG score ≥ 8 were considered as hirsutism and those with mFG score <8 were considered as non hirsute patients. Based on clinical examination patients were advised to undergo few of the following haematological and radiological investigations to diagnose PCOS and to rule to other causes of hirsutism. Investiagtions such as CBP, FBS, HbA1C, Lipids, thyroid hormones, testosterone, DHEA-S (dehydro epiandrosterone – sulphate), 24 hour urine free cortisol, 17-hydroxy progesterone, prolactin, LH, FSH, LH/FSH and USG.

BMI, waist circumference, WHR, mFG score were evaluated. All the data entered into spread excel sheet and results were analysed.

RESULTS:

Among 140 patients were presented with complaints of hirsutism 57 (40.7%) diagnosed with PCOS after being investigated. The mean age of PCOS women with hirsutism was 31.2±6.5. Hirsutism was evaluated by mFG score – virtual scoring system among PCOS women. mFG score ≥ 8 were observed in 15 (26.3%) patients out of 57 PCOS women, whereas, remaining 42 (73.6%) PCOS women had mFG score < 8.

The mean of mFG score was 5.4±2.8. The face was most common site of involvement followed by chest and back.

Most of the women with mFG score ≥ 8 were obese (86.6%) and waist circumference ≥ 88 (86.6%). Around 40% of women with mFG sore < 8 were obese and with waist circumference < 88. BMI analysis has showed statistically significance between these two groups.

Out of 57 PCOS women, 30 (52.5%) were obese, 19(33.3%) had acne, 36 (63.1%) patients presented with menstrual irregularities and 33 patients (57.8%0 had waist circumference > 88, and 24 had (42.1%) acanthosis nigricans (Table 1).

Among 57 PCOS women complaining of hirsutism, 48 were married. 14 (29.1%) out of 48 were associated with infertility.

Table 1. mFG score association with other characteristics of PCOS women

Parameters	mFG score		No. of patients	Percentage	Odd's ratio	P	Statistical significance
	≥ 8 n=15, (%)	< 8 n=42, (%)					
BMI							
Obese	13(86.6)	17(40.4)	30	52.6%	9.558	0.006	SS
Non obese	2(13.3)	25(59.5)	27	47.3%			
Acne							
Present	6(40)	13(30.9)	19	33.3%	1.487	0.52	NS
Absent	9(60)	29(69.04)	38	66.6%			
Menstrual cycles							
Regular	4(26.6)	17(40.4)	21	36.8%	0.53	0.34	NS
Irregular	11(73.3)	25(59.5)	36	63.1%			
Waist circumference							
≥ 88	13(86.6)	20(47.6)	33	57.8%	7.150	0.016	SS
< 88	2(13.3)	22(52.3)	24	42.1%			
Acanthosis nigricans							
Present	9(60)	15(35.7)	24	42.1	2.7	0.107	NS
Absent	6(40)	27(64.2)	33	57.8			
Infertility							
Present	2(16.6)	12(33.3)	14	29.1	0.40	0.281	NS
Absent	10(83.3)	24(66.6)	34	70.8			

DISCUSSION:

Polycystic ovary syndrome (PCOS) has also been referred to as Stein-Leventhal Syndrome and PCOD. PCOS is a hormonal disorder causing enlarged ovaries with small cysts at its outer edge. PCOS alters the levels of multiple hormones. These cysts are harmless follicles that are up to 8 mm in size.

PCOS typically begin around the onset of puberty. Menstrual cycles may be normal at first and then become irregular, or the onset of menses may be delayed.

Hyperandrogenism in PCOS is due to primary ovarian dysfunction and also secondary to disordered gonadotropin activity; Disordered gonadotropin activity is associated with elevated LH:FSH ratios because of inappropriate secretion of LH [8]. LH acts as ligand for LH receptor on ovarian theca cells responsible for ovarian androgen production. Decreased FSH is because impaired folliculogenesis resulting in anovulation. Primary abnormal ovarian dysfunction causes hyperandrogenism by overexpression of CYP 17 gene, which is responsible for androgen biosynthesis and increased expression of LH receptor [9,10].

Insulin resistance role in hyperandrogenism is indirectly explained by the findings of hyperandrogenism in female subjects with type A insulin resistance syndrome [11]. Insulin also enhances function of ovarian theca cells for production of androgens in concert with LH [2]. Among 140 patients were presented with complaints of hirsutism, 57 (40.7%) diagnosed with PCOS after being investigated. The mean age of PCOS women with hirsutism was 31.2±6.5 in the present study. Based on NIH criteria, PCOS prevalence among women with hirsutism was noted as 6.8%, 6.5%, 6.5%, 6.6% by a study from Greece, Diamanti-Kandarakys et al [12], study from spain, Asuncion M et al [13], a study by Kamaraply et al [14] and a study by Aziz et al [4] respectively. High prevalence noted by Zandi et al (60.2%) [13]. Based on Rotterdam criteria, includes diagnosis by ultrasound, varied PCOS prevalence among with hirsutism observed by different studies; Mohjerani Tehraani et al [16] observed 70% PCOS prevalence, Ansarin et al [17] noted 63%, Noorbala et al [18] noted 61%, Lau et al noted 12% [19], Gati et al [20] and Adams et al [21] noted higher prevalence of 91% and 92% respectively.

The mFG score ≥ 8 was observed in 15 (26.3%) patients out of 57 PCOS women, whereas, remaining 42 (73.6%) PCOS women had mFG score < 8. This study is correlated by Noorbala et al, Sharma et al [18,22]. Higher mFG score was noted by Chhabra et al, Ahmad et al [23,24]. Asuncion M et al [25] did a study on 154 women donating blood in Madrid, Spain, noted 7.1% had mFG score of ≥8. Sagsoz et al [26] observed an mFG score of ≥8 in 8.3% of 204 Turkish women, aged 20–54, attending an outpatient clinic for a regular checkup. Souter t al [27] stated that up to 50% of subjects seen with mFG scores of 3–5 have an androgen excess disorder.

The mean of mFG score was 5.4±2.8. The face was most common site of involvement followed by chest and back. Moderate to severe hirsutism should seek medical care particularly if there is involvement of upper lip, chin and lower abdomen. This will helps to screen population for causes of hirsutism.

Aswini R et al [28] did a study on Hirsutism assessment by mFG score and also found association between hirsutism and metabolic syndrome. They documented 77% of patients were presented with mFG score <8. The mean mFG score was 5.5. Metabolic syndrome was present in 44%. About 65.2% of patients with score ≥8 had metabolic syndrome, whereas only 37.7% of patients with score <8 had metabolic syndrome (P = 0.019). Metabolic syndrome (P = 0.018) and PCOS (P= 0.003) were the significant variables in logistic regression analysis.

Most of the women with mFG score ≥ 8 were obese (86.6%) and waist circumference ≥ 88 (86.6%). Around 40% of women with mFG sore < 8 were obese and with waist circumference < 88. BMI analysis has showed statistically significance between these two groups.

Out of 57 PCOS women, 30 (52.5%) were obese, 19 (33.3%) had acne, 36 (63.1%) patients presented with menstrual irregularities and 33 patients (57.8%) had waist circumference > 88, and 24 had (42.1%) acanthosis nigricans in this study. Similar findings with minimal variation in noted in other studies [23,29].

Aswini R et al [28] stated that among the patients with mFG score ≥8, 87% (20/23) had waist circumference ≥88 cm and in patients with score <8, there were only 54.5% (42/77) with waist circumference ≥88 cm (*P* 0.006). 82.6% (19/23) in mFG ≥8 group and 48.1% (37/77) in mFG <8 group were pre obese/obese (*P* = 0.004). PCOS was present in 27%. 52.2% (12/23) in mFG ≥8 group and 19.4% (15/77) in mFG <8 group had PCOS (*P* = 0.002). Acanthosis nigricans was present in 40%. 60.9% (14/23) in mFG ≥8 group and 33.8% (26/77) in mFG <8 group (*P* = 0.02). Acne was seen in 30% and thyroid disorders in 19%. Among 57 PCOS women complaining of hirsutism, 48 were married. 14 (29.1%) out of 48 were associated with infertility.

Hyperandrogenism or androgen excess represents a common reproductive endocrinopathy affecting between 5 and 10% of reproductive-aged women [30,31]. The most common hyperandrogenic disorder is PCOS affecting approximately 80–85% of women with androgen excess [30,32]. In fact, hirsutism is included as a diagnostic criterion for PCOS in all three currently available definitions of the disorder [33,34].

Endocrine society recommends testing of androgens levels in women with moderate to severe hirsutism or rapid onset of hirsutism or hirsutism associated with any of the following: menstrual irregularity, central obesity, acanthosis nigricans, or clitoromegaly and as hyperandrogenemia is undetectable in approximately 50% of these cases using conventional laboratory tests, testing it among women with mild hirsutism (FG score 8-15) is not recommended [35,36].

Hirsutism is a cosmetic problem among patients with PCOS. It can be controlled by using oral contraceptive pills for suppression of ovarian androgen production [37] or androgen receptor blockers such as cyproterone actate, flutamide, spironolactone to reduce hair growth [38]. These pharmacological interventions can be used along with electrolysis or laser therapy.

CONCLUSION:

Hirsutism can be treated medically and electrolysis or laser treatment can be used to permanently remove unwanted hair. Both hirsutism and PCOS can be treated successfully when diagnosed at younger age. Hirsutism should be assessed in depth by clinically, especially moderate and severe hirsutism and also by investigations to find out the exact cause behind it.

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