PREVALENCE AND MANAGEMENT OF POLYCYSTIC OVARY SYNDROME AND ITS ASSOCIATION WITH DEMOGRAPHICS

Saleha Sadeeqa, Komal Irshad, Hafiza Hina Ashraf, Umm e Ammara, Rabia Fiaz, Nazra Islam, Bushra Ali Sherazi

Lahore College for Women University, Lahore Pakistan

ABSTRACT

Objective: To find out the prevalence, lifestyle modifications and medications prescribed in polycystic ovary syndrome.

Study Design: Cross-sectional study.

Place and Duration of Study: In different health care settings of Punjab Pakistan, from Jul 2018 to Sep 2018.

Methodology: A structured data collection form was filled by face to face interviews with patients. Female patients with a diagnosis of polycystic ovary syndrome in the age range of 15-45 years were included and a total of 200 patients participated.

Results: Demographics of the respondents had association with frequency of miscarriage (p<0.001), medication prescribed (p<0.001), physical exercise (p<0.001) and diet plan (p<0.001). Most of the patients had their body mass index in the range of overweight and obese. Treatment included drug therapy in 40% patients and lifestyle modification (regular exercise and dietary changes) were recommended in 60% of the patients. Metformin and contraceptives were most commonly prescribed drugs without causing any significant adverse drug reactions.

Conclusion: It is concluded that polycystic ovary syndrome prevails higher in 30-45 years age, treatment usually starts with drug therapy along with lifestyle changes like weight loss, dietary changes and exercise. Metformin and oral contraceptives were most commonly prescribed drugs.

Keywords: Management, Medication, Polycystic ovary syndrome, Prevalence.

INTRODUCTION

Polycystic Ovary Syndrome (PCOS) is the most common endocrine disorder in reproductive aged women affecting 8-12% of women[1]. PCOS is a hyperandrogenic disorder linked with chronic oligoanovulation, polycystic ovarian morphology, psychological impairment, mood disorders and metabolic disorders chiefly insulin resistance which is a major factor responsible for altered androgen production and metabolism[2].

PCOS is caused by an imbalance in the hormone of brain and ovaries. PCOS usually occurs when leutinizing hormone or level of insulin are too high which cause the ovaries to make extra amount of testosterone[3]. Due to high levels of androgens ovulation does not occur regularly and cause the follicles to become enlarged resulting in the formation of ovarian cysts[4]. Symptoms of PCOS include irregular menstrual cycle, pelvic pain, excess facial hair and hair on chest, infertility, weight gain, acne and oily skin, male pattern baldness[5].

Risk factors associated with PCOS are irregular menstruation, family history of infertility, diabetes, metabolic disorder, unpleasant mood and lack of physical activity. PCOS patients are at a greater risk of developing glucose intolerance and type II diabetes mellitus[6].

The choice of treatment depends on the symptoms of PCOS. Metformin and oral contraceptives are the first line treatment after the life style changes. Hormonal contraceptives are uesd for menstrual abnormalities and hirsutism and acne. Metformin is beneficial for metabolic/glycemic abnormalities and for improving menstrual disturbance[7]. There is a significant relationship between PCOS and inappropriate diet and low physical activity so training and female

Correspondence: Dr Saleha Sadeeqa, Institute of Pharmacy, Lahore College for Women University, Lahore Pakistan
Email: salehasadeeqa@gmail.com
Received: 21 Mar 2019; revised received: 07 Aug 2019; accepted: 16 Aug 2019

awareness is necessary especially about optimum diet and regular daily physical activity[8].

Lifestyle modifications with low carbohydrate diet as well as alternative dietary changes including small and frequent meals (5-6 meals a day), offer the evidence based first line strategy for the management of PCOS symptoms and insulin resistance[9]. Smoking worsened the condition of PCOS patients as it increases the insulin resistance and their chances of cardiovascular co-morbidity along with diabetes[10], modifying additional life style factors, including alcohol consumption, psycho social stressors and smoking, are also crucial in long-term treatment of PCOS.

Current study aims to assesss prevalence and management of PCOS in Lahore Pakistan.

METHODOLOGY

An observational cross-sectional study design was adapted, using convenient sampling technique, during the period from July 2018 to September 2018. Female patients with a diagnosis of PCOS in the age range of 15-45 years were included, this age range showed the reproductive age of females. Patients with any other gynecological disorder were excluded. The study was conducted in DHQ Hospital Sahiwal, DHQ Hospital Gujranwala, Jinnah Hospital Lahore, Services Hospital Lahore.

A structured data collection form was designed which consisted of three parts. Part A consisted of patient's demographic profile, part B consisted of prevalence of PCOS, part C consisted of management of PCOS through medication and life style modification. Data of 200 patients was filled by hand through face to face interaction with the patients. At the end accurately filled questionnaire were then evaluated for study. Data was analyzed statistically through SPSS by applying chi-square test. $p \leq 0.05$ was considered to be statistically significant.

The study was approved from Institute of Pharmacy, LCWU Lahore Pakistan. Prior permission was sought from the heads of respective hospitals, before starting the survey an informed consent letter regarding the aim and importance of the study was signed by the patients. Confidentiality of personal information was assured.

RESULTS

Patient demographics are depicted in table-I. Results showed that age ranges from 15-45 years. A total of 15% patients are in the 15-22 years age, 31%in 23-30 years range, 35% in 31-38 years range and 19% in 39-45 years age range. According to marital status, 52% of the patients were married while 48% were unmarried. BMI of 13% patients was normal, 52.5% patients were overweight, only 0.5% were under weight and 34% were obese

Table-I: Patient demographics.

Demographics		Frequency	Percentage
Age (15-45 years)	15-22	30	15
	23-30	62	31
	31-38	70	35
	39-45	38	19
Marital Status	Married	104	52
	Un married	96	48
BMI (Body Mass Index)	Under weight	1.0	0.5
	Normal	26	13
	Over weight	105	52.5
	Obese	68	34
Past Medical History	Diabetes	72	36
	Other diseases	128	64
Family history	Have PCOS	88	44
	Do not have PCOS	112	56

individuals. A total of 36% of the patients were with a family history of diabetes while 44% of the patients had a family history of PCOS.

Association of demographics with prevalence of PCOS is depicted in table-II. Results showed that significant association was found between menstrual disturbance and PMH (p=0.027), between PCOS diagnosis and BMI (p<0.001), between continuous weight gain and BMI (p<0.001), between miscarriage and age (p<0.001), marital status (p<0.001), BMI (p<0.001), PMH (p<0.001) & family history (p<0.001), between type of treatment and age (p<0.001), marital status (p<0.001), BMI (p<0.001), PMH (p<0.001) & family history (p<0.001), between medication prescribed and age (p<0.001), marital status (p<0.001), BMI (p<0.001), PMH (p<0.001) & family history (p<0.001), between ADR and BMI (p<0.001), between physical exercise and age (p<0.001), marital status (p<0.001), BMI (p<0.001), PMH (p<0.001) & family history (p<0.001), between diet plan and age (p<0.001), marital status (p<0.001), BMI (p<0.001), PMH (p<0.001) & family history (p<0.001), marital status (p<0.001), BMI (p<0.001), PMH (p<0.001) & family history (p<0.001), between cesarian delivery andage (p<0.001), marital status (p<0.001), BMI (p<0.001), PMH (p<0.001) & family history (p<0.001).

Table-II: Association of demographics with prevalence of polycystic ovary syndrome.

Questions	Age	Marital Status	BMI	Past Medical History	Family History
Do you routinely face menstrual disturbance?	0.194	0.247	0.264	0.027	0.172
How was PCOS Diagnosed?	0.232	0.216	<0.001	0.411	0.224
Do you have Family history of disease?	0.785	0.942	0.115	0.489	0.922
Do you face continuous weight gain?	0.696	0.603	<0.001	0.685	0.794
Do you face difficulty in losing weight?	0.536	0.619	0.156	0.380	0.439
Have you faced Pregnancy complications due to PCOS?	0.180	0.107	0.094	0.055	0.248
Have you suffered any miscarriage?	<0.001	<0.001	p<0.001	<0.001	<0.001
Have you experienced Cesarian delivery?	<0.001	<0.001	<0.001	<0.001	<0.001

Table-III: Association of demographics with management of polycystic ovary syndrome.

Questions	Age	Marital Status	BMI	Past Medical History	Family History
What type of treatment you are getting for PCOS?	<0.001	<0.001	<0.001	<0.001	<0.001
What medication is prescribed to you?	<0.001	<0.001	<0.001	<0.001	<0.001
Is your medication effective in treating your PCOS?	0.961	0.858	0.091	0.647	0.895
Have you faced any medication adverse reaction?	0.298	0.450	<0.001	0.280	0.569
Do you perform any physical exercise?	<0.001	<0.001	<0.001	<0.001	<0.001
Do you follow any diet plan?	<0.001	<0.001	<0.001	<0.001	<0.001
Does your gynaecologist encourage you for physical exercise?	0.696	0.603	<0.001	0.787	0.695
Do you smoke?	<0.001	<0.001	<0.001	<0.001	<0.001
Do you use leafy green vegetables?	<0.001	<0.001	<0.001	<0.001	<0.001

Association of demographics with management of PCOS is depicted in table-III. Results showed that significant association was found between type of treatment and age (p<0.001), marital status (p<0.001), BMI (p<0.001), PMH (p<0.001) & family history (p<0.001), between medication prescribed and age (p<0.001), marital status (p<0.001), BMI (p<0.001), PMH (p<0.001) & family history (p<0.001), between gynaecologist encouragement for physical exercise and BMI (p<0.001), between smoking and age (p<0.001), marital status (p<0.001), BMI (p<0.001), PMH (p<0.001) & family history (p<0.001) & between leafy green vegetables and age (p<0.001), marital status (p<0.001), BMI (p<0.001), PMH (p<0.001) & family history (p<0.001).

Results showed that 42% patients were prescribed with metformin and 40% were prescribed levonorgestrel and ethinyloestradiol 72% of the patients did physical exercise for less than half hour daily, 56% of the patients followed a diet plan suggested by their gynaecologist. 69% of the patients were consuming leafy green vegetables.

DISCUSSION

Present study was focused to assess prevalence and management of PCOS. Demographic profile indicates that majority of PCOS patient were in the age ranging from 30-45 year and were married because females of this age group faced difficult in naturally conceiving. Naderpoor *et al* found that PCOS prevails in 12-21% women of reproductive age[11]. Most patients had BMI falling in the range of overweight and obese, this is inline with previous study[11,12]. Study found that 50% patients had a family history of PCOS and 40% had a family history of diabetes, this is inline with previous study[13,14].

Menstrual cycle of most of the patients was disturbed and major signs and symptoms along with menstrual disturbance observed were continuous weight gain, hirsutism, acne, male pattern baldness, depression and mood swings. As described by Madnani *et al* in her study that the clinical signs of PCOS are hyper androgenism, acne, irregular menses, infertility, obesity and alopecia[15].

Pasquali found that the excess weight or obesity is associated with elevated androgen production rates in adolescent girls. Adolescent serum androgen levels may be preserved into adulthood and are associated with menstrual dysfunction, which suggests a potential risk of developing PCOS, Particularly in the presence of high body mass index[16].

Hayek *et al* suggested that female with PCOS who conceive might suffer from pregnancy-related complications such as gestational diabetes, pregnancy induced hypertension, preeclampsia and increased risk of miscarriage[17].

Drug therapy in 40% patients along with life style modifications in 60% patients were recommended, as stated by American College of Obstetricians and gynecologists that life style modification along with a change in diet were considered as first line treatment in PCOS[9,18].

Present study found that Metformin and contraceptives were prescribed as the first line therapy in this disease along with dietary supplements, which is inline with the findings of Richard Scott Luicidi[19].

Toosy *et al* in his research suggested that Metformin is an insulin sensitizing agent which reduce serum glucose levels by improving glucose uptake and use in the periphery and reduction of hepatic glucose output. Metformin use was more successful in restoring menstruation and ovulation in women with PCOS[20].

Clomiphene citrate is used to treat infertility by inducing ovulation. While anovulation can lead to long term health consequences such as endometrial cancer and hyperplasia. Ovulation induction is the simplest and least expensive infertility therapy[21].

Metformin and contraceptives effectively treated PCOS and no ADR were observed in any of the patients. All of the patients were encouraged by their gynecologist to do any kind of physical activity for at least half an hour daily so that their insulin resistance would decrease and they shall be able to loose weight easily. Along with physical exercise theywere asked to add fibrous green vegetables in their diet and avoid fatty food.

CONCLUSION

Polycystic ovary syndrome prevails higher in 30-45 years age, treatment usually starts with drug therapy along with lifestyle changes like weight loss, dietary changes and exercise. Metformin and oral contraceptives were most commonly prescribed drugs.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

REFERENCES

1. Catherine B, Lisa LJ, Helena MJ. Exercise therapy in polycystic ovary syndrome: a systematic review. Teeda Hum Reprod 2011; 17(2): 171-83.
2. Pasquali R, Elisabetstener-Victorin. Research in polycystic ovary syndrome today and tomorrow. Clin Endocrinol (Oxf) 2011; 74(4): 424-33.
3. Dotson, Kay A. Polycystic ovary syndrome: fighting back. Spar Hawk Health Pub 2013; 29(6): 551–55.
4. Goldzieher JW, Leonard R. Clinical and Biochemical Features of Polycystic Ovarian Disease. Axelrod Sci Dir 2008; 14(6): 631-53.
5. Goodarzi MO, Dumesic DA, Chazenbalk G, Azziz R. Pub MED: Polycystic ovary syndrome: Etiology, pathogenesis and diagnosis. Nature Rev Endocrinol 2011; 7(4): 219-31.
6. Legro RS, Arslanian SA, Ehrmann DA, Hoeger KM, Murad MH, Pasquali R, et al. Diagnosis and treatment of polycystic ovary syndrome: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab 2013; 98(12): 4565-92.
7. Sedighi S, Akbar SAA, Afrakhteh M, Majid HA, Mahmoodi Z. Comparison of Lifestyle in Women with Polycystiv Ovary Syndrome and Healthy Women. Glob J Health Sci 2015; 7(1): 228-34.
8. Papavasiliou K, Papakonstantinou E. Nutriotinal support and diatery interventions for women with polycystic ovary syndrome: Dove Press 2017; 9(6): 63-85.
9. Pau CT, Keefe CC Cigarette smoking, nicotine levels and increased risk for metabolic syndrome in women with polycystic ovary syndrome. Gynecol Endocrinol 2013; 29(6): 551-55.
10. Pasquai R. Contemporary approaches to management of polycystic ovary syndrome. Ther Adv Endocrinol Metabol 2018; 9(4): 123-34.
11. Norman RJ, Davies MJ, Lord J, Moran LJ. The role of lifestyle modification in polycystic ovary syndrome. Trends Endocrinol Metab 2002; 13(6): 251-57.
12. Naderpoor N, Gibson-Helm M, Shorakae S, Joham A. Polycystic ovary syndrome: optimal management in general practice. Med Today 2017; 18(11): 55-59.
13. Tang T, Glanville J, Hayden CJ, White D, Barth JH, Balen AH. Combined lifestyle modification and metformin in obese patients with polycystic ovary syndrome. A randomized, placebo-controlled, double-blind multicentre study. Hum Reprod 2006; 21(1): 80-89.
14. Shan B, Cai JH, Yang SY, Li ZR. Risk factors of polycystic ovarian syndrome among Li people. Asian Pac J Trop Med 2015; 8(7): 590-93.
15. Madnani N, Khan K, Chauhan P, Girish parmar polycystic ovary syndrome. Indian J Dermatol Venereol Leprol 2013; 79(3): 310-21.
16. Pasquali R. Contemporary approaches to the management of poly cystic ovary syndrome. Ther Adv Endocrinol Metab 2018; 9(4): 123-34.
17. Hayek SE, Bitar L, Hamdar LH, Mirza FG, Daou G. Poly cystic ovarian syndrome. Front Physiol 2016; 7(1): 124-29.
18. Sedighi S, Akbar AA, Afrakhteh M, Majid HA, Mahmoodi Z. Comparison of lifestyle in women with polycystiv ovary syndrome and healthy women. Glob J Health Sci 2015; 7(1): 228-34.
19. Luicidi RS, Azziz R, Carmina E, Dewailly D. Task force on the phenotype of the polycystic ovary syndrome of the androgen excess and PCOS society. Fertil Steril Medline 2009; 91(2): 456-88.
20. Toosy S, Sodi R, Joseph M. Pappachan. Lean Poly Cystic Ovary Syndrome: an evidence based practical approach. J Diabetes Metab Dis 2018; 17(1): 371-75.
21. Havelock J. Poly cystic ovary syndrome. Br C Med J 2018; 60(4): 210-16.