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Original Article

Infertility in Women with Polycystic Ovary Syndrome — A Management Dilema

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ABSTRACT

Introduction: *The illness known as polycystic ovarian syndrome (PCOS) is diverse in nature, with its etiology and pathology believed to result from the interplay of genetic and environmental factors throughout intrauterine and postnatal development.* ***Methods and Materials:*** *This cross-section observational study was carried out in Al manar hospital and SIBL hospital. The duration of the period from July 2021 to June 2022. A total of 150 patients were participate in the study. After collection, the data were checked and cleaned, followed by editing, compiling, coding and categorizing according to the objectives and variable to detect errors and to maintain consistency, relevancy and quality control. Statistical evaluation of the results used to be obtained via the use of a window-based computer software program devised with Statistical Packages for Social Sciences (SPSS-25).* ***Results:*** *Maximum (42%) patients were within the age group of 25-30 years. Only 4.84% had more than 40 years of age. Mean (±SD) age was 26 ± 11.6 years. Regarding age of marriage maximum (77.6%) of the patients'age of marriage was 13-18 years. 46.67% of the patient were underweight, 40% were within normal range and 13.33% were overweight. Regarding Pharmacological measures, 40% patients were given*

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Clomiphene citrate, 20% Letrozole and 6.67% gonadotropin therapy. About 33.33% were under gone Ovarian drilling. Here, Success rate for Pharmacological measures was 72% (N=100) And Success rate for Ovarian drilling was 65% (N=50). ***Conclusion:*** *Comprehensive evaluation of the infertility is required to rule out alternative reasons of infertility in PCOS. PCOS therapy is still debatable because it is a common syndrome and the leading cause of infertility. Lomifene citrate and letrozole are also considered first-line treatments. The second line of treatment is gonadotrophin therapy and ovarian drilling.*

Keywords*: PCOS, Infertility, Management*

INTRODUCTION

The illness known as polycystic ovarian syndrome (PCOS) is diverse in nature, with its etiology and pathology believed to result from the interplay of genetic and environmental factors throughout intrauterine and postnatal development[1,2]. PCOS affects not only women who are reproductive age (prevalence varies from 9% to 18% depending on diagnostic criteria) [3,4], but also postmenopausal women and adolescents [2]. The complexity of the endocrine and metabolic problems associated with polycystic ovarian syndrome cannot be fully captured by the expression of this illness.

The hallmark characteristics of PCOS women are dyslipidemia, significant insulin resistance (IR), and poor reproductive function [5,6]. In addition to being infertile, women with PCOS have an increased risk of obesity, diabetes mellitus, heart disease, endometrial, ovarian, and breast cancer, as well as mental disorders like anxiety and depression [7]. Regardless of the diagnosis of PCOS that is applied, prenatal and neonatal problems affect 60% of PCOS women and 30% of their progeny[8]. Pregnant PCOS women are more likely to miscarry, have high perinatal mortality, pregnancy-induced hypertension and preeclampsia (3-5-fold increased risk), develop gestational diabetes mellitus (GDM; 3-fold increased risk), and have small-for-gestational-age infants (fetal macrosomia) [5,6,9]. Because testosterone can disrupt placenta architecture and function, trophoblast invasion, and pregnancy hypertensive problems are all at risk in PCOS pregnant women with hyperandrogenism (a result of hyperinsulinemia) [9]. Insulin is essential for cell growth, metabolism, and reproduction [10]. The primary metabolic function of insulin is to bring blood glucose levels within normal ranges and to keep them there [11]. Regardless of BMI, 85% of PCOS-afflicted women have insulin resistance [12,13], which is the requirement for higher-than-normal insulin dosages to maintain normal blood glucose levels. Pancreatic β cell activity increases in PCOS women until the pancreatic cells' ability to produce insulin is reduced, at this point, the women have glucose intolerance or type II diabetes [11]. Insulin resistance and hyperinsulinemia both reduce fertility and the quality of pregnancies through intricate processes [10,12]. The intimate connection between hyperandrogenism and hyperinsulinemia in PCOS women [4,12,14,15] produces a toxic environment that impairs fertility and messes up the course of pregnancy [16]. It seems only natural to want to lower endogen insulin levels and insulin resistance to improve fertility and pregnancy outcomes in those women, given that insulin resistance and its

subsidiary hyperinsulinemia/hyperandrogenism are limitational features in PCOS women when speaking of fertility and pregnancy outcomes. Women with PCOS may reduce their insulin resistance by using insulin-sensitizing medications or, if they are obese, by losing weight [12]. It is essential that efforts must be made to create easy, affordable, and useful tools for the assessment, treatment, and prevention of infertility associated with PCOS syndrome in order to maximize available resources. The purpose of this study is to examine management of infertility in women with PCOS syndrome.

METHODS AND MATERIALS

This cross-section observational study was carried out in Al manar hospital and SIBL hospital. The duration of the period from July 2021 to June 2022. A total of 150 patients were participate in the study. All medically diagnosed infertility in women with polycystic ovary syndrome and gave consent to be included in the study. Severely ill patients and not willing to participate were excluded. Face to face interview was done to collect data with a semi-structured questionnaire. After collection, the data were checked and cleaned, followed by editing, compiling, coding and categorizing according to the objectives and variable to detect errors and to maintain consistency, relevancy and quality control. Statistical evaluation of the results used to be obtained via the use of a window-based computer software program devised with Statistical Packages for Social Sciences (SPSS-25).

RESULT

Table-1: Distribution of the patients by age group

Age group	N=150	%
18-25	15	24.0
25-30	26	42.0
30-35	12	20.0
35-40	6	10.0
More than 40	3	4.84
Mean (±SD) age	32 ± 11.6	

Maximum (42%) patients were within the age group of 25-30 years. Only 4.84% had more than 40 years of age. Mean (±SD) age was 26 ± 11.6 years.

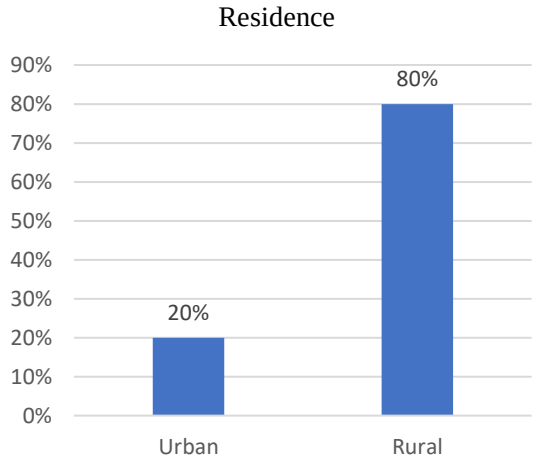

Figure-1: Distribution of the patients by residence

Regarding residence, 80% of the patients were from rural area and 20% were from urban area.

Table-2: Distribution of the patients by age of marriage

Age of Marriage	N=150	%
Less than 13	18	12.2
13-18	116	77.6
18-25	16	10.6

Regarding age of marriage maximum (77.6%) of the patients' age of marriage was 13-18 years.

Table-3: Distribution of the patients by BMI

BMI	N=150	%
Underweight	70	46.67
Normal Range	60	40
Over weight	20	13.33

46.67% of the patient were underweight, 40% were within normal range and 13.33% were overweight.

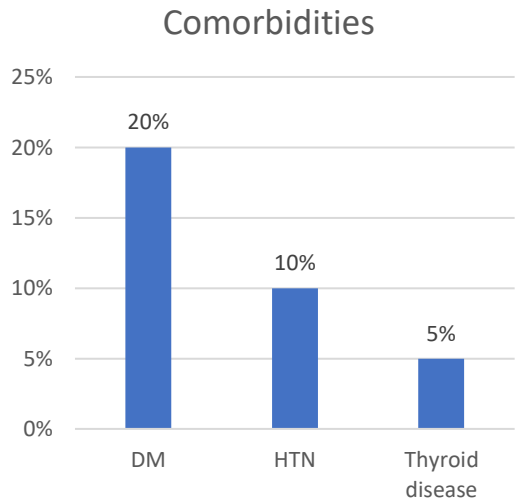

Figure-2: Distribution according to comorbidities

20% of the patients had DM, 10% had HTN and 5% had thyroid disease.

Table-4: Distribution according to Pharmacological measures and Ovarian drilling

Pharmacological measures	N=150	%
Clomiphene citrate	60	40
Letrozole	30	20
gonadotropin therapy	10	6.67
Ovarian drilling	50	33.33

Regarding Pharmacological measures, 40% patients were given Clomiphene citrate, 20% Letrozole and 6.67% gonadotropin therapy. About 33.33% were under gone Ovarian drilling.

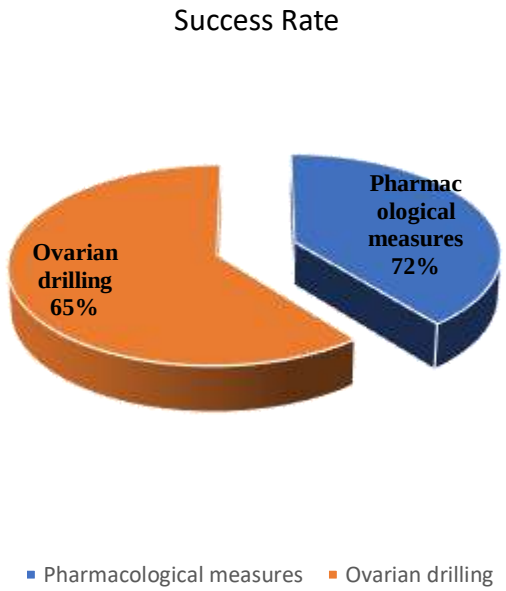

Figure-3: Distribution according to success rate

Here, Success rate for Pharmacological measures was 72% (N=100) And Success rate for Ovarian drilling was 65% (N=50).

DISCUSSION

Polycystic ovarian syndrome (PCOS) is an endocrine and reproductive disorder that affects 5% to 13% of reproductive-age women. PCOS is the most prevalent cause of hyperandrogenism and oligoanovulation in reproductive-age women, and it has been associated to infertility as well as clinical and metabolic problems [17, 18].

In this study, Maximum (42%) patients were within the age group of 25-30 years. Only 4.84% had more than 40 years of age. Mean (±SD) age was 26 ± 11.6 years. Regarding age of marriage maximum (77.6%) of the patients'age of marriage was 13-18 years. 46.67% of the patient were underweight, 40% were within normal range and 13.33% were overweight. A previous study showed that, After controlling for relevant confounders, a logistic regression model study indicated a connection between BMI and infertility (OR 1.03, 95% CI: 1.02-1.05). When BMI was 19.5 kg/m2, there was a non-linear association between BMI and infertility, with each unit rise in BMI reducing the probability of infertility by 33%. When BMI was 19.5 kg/m2, each unit rise in BMI suggested a 3% increase in infertility risk [19].

Our study revealed that, Regarding Pharmacological measures, 40% patients were given Clomiphene citrate, 20% Letrozole and 6.67% gonadotropin therapy. About 33.33% were under gone Ovarian drilling. Here, Success rate for Pharmacological measures was 42% And Success rate for Ovarian drilling was 65%. In women with PCOS who are infertile, clomiphene citrate (CC) is still the first-line ovulation induction medication [20]. Letrozole belongs to the aromatase inhibitors class. Aromatase inhibitors cause reduced E2 levels. This significantly minimises the likelihood of multiple follicle formation. This is one of the primary benefits of letrozole among CC patients. Another advantage is that letrozole does not alter endometrial oestrogen receptors, hence it has no negative impact on endometrial thickness or cervical mucus [21]. Gonadotropin therapy in conjunction with timed intercourse is a second-line treatment option. To prevent ovarian hyperstimulation syndrome (OHSS) and multiple pregnancies in women with PCOS, all recommendations now agree on using a low-dose step-up regimen. Women with PCOS are predisposed to OHSS due to their large number of antral follicles[22, 23]. Laparoscopic or transvaginal ovarian drilling, commonly known as ovarian diathermy or electrocoagulation, is an alternate treatment. It serves as a second line of defence. Indeed, this procedure can be suggested after 4 to 6 cycles of CC and before to gonadotrophin treatment [24].

CONCLUSION

PCOS is a common syndrome and the leading cause of infertility. PCOS is comprehensive evaluation of the infertility is required to rule out alternative reasons of infertility. PCOS therapy is still debatable because it is a common syndrome and the leading cause of infertility. Lomifene citrate and letrozole are also considered first-line treatments. The second line of treatment is gonadotrophin therapy and ovarian drilling.

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