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Research Article

ANALYSIS OF OVULATION INDUCTION WITH METFORMIN VERSUS LETROZOLE IN FEMALES PRESENTING WITH POLYCYSTIC OVARIAN SYNDROME

Sardar Umer Rehman¹, Aasia Zehra¹, Ayesha Waheed²

¹ Central Park Medical College

² Rashid Latif Medical College

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Abstract:

Introduction: It was reported recently that Letrozole has good effects on endometrium, so it enhances rates of pregnancy after prospective ovulation induction for subjects suffering with PCOS. These beneficial advantages are lessened rate for occurrence of multiple pregnancies, no anti estrogenic adverse events, and consequently intensive monitoring is not much needed. **Objectives of the study:** The basic objective of the study was to analyze the ovulation induction with metformin versus letrozole in females presenting with polycystic ovarian syndrome. **Methodology of the study:** This cross-sectional study was conducted in Central Park Medical College during 2018. Total of 100 cases were enrolled by Non-Probability, consecutive Sampling. Woman age 18-39 years, BMI <35, Infertility due to anovulation, Polycystic Ovarian Syndrome. After taking Informed consent, the demographic information (name, age, contact, BMI) was noted. Then subjects were divided on random basis in two categories by utilizing lottery method. Females of both groups were counseled about dietary modification and encouraged to do brisk walk for 30 min twice a day. **Results:** In Group-A mean age of women was 28.18 ± 6.58 years. In Group-B mean age of women was 27.08 ± 5.15 years. In Group-A minimum and maximum age of women was 18 and 39 years while in Group-B this was 18 and 37 years respectively. As per body mass index criteria in Group-A 20(20%) women were having normal BMI, 44(44%) were overweight and 36(36%) were obese. In Group-B 20(20%) women were having normal weight, 59(59%) were overweight and 21(21%) were obese. **Conclusion:** It is concluded that letrozole plus metformin is more effective as therapy for the induction of ovulation in females presenting with polycystic ovarian syndrome as compared to letrozole alone.

Corresponding author:

Sardar Umer Rehman,
Central Park Medical College

QR code



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INTRODUCTION:

It was reported recently that Letrozole has good effects on endometrium, so it enhances rates of pregnancy after prospective ovulation induction for subjects suffering with PCOS. These beneficial advantages are lessened rate for occurrence of multiple pregnancies, no anti estrogenic adverse events, and consequently intensive monitoring is not much needed. Studies has reported that letrozole effective in ovulation induction from 64.9% to 78.7% [1]. One study reported very low frequency of ovulation induction with letrozole i.e. 60.78%. While another reported that letrozole is effective for ovulation induction in 88% cases. In contrast to that ovulation induction with letrozole in combination with metformin was 90.57% [2].

Literature has reported that letrozole is effective in ovulation induction but there are conflicting results reported in literature. Moreover, there are no study conducted which compares letrozole in combination with metformin and letrozole alone and local magnitudes are also missing [3]. Through this study we wanted to get local magnitudes and results which can be applicable and on the basis of which we can implement the use of letrozole with metformin for management of PCO instead of letrozole alone [4]. Objective of this study is to compare the frequency of Ovulation Induction after administration of Letrozole with metformin versus Letrozole alone in females presenting with Polycystic Ovarian Syndrome [5].

Objectives of the study

The basic objective of the study was to analyze the ovulation induction with metformin versus letrozole in females presenting with polycystic ovarian syndrome.

METHODOLOGY OF THE STUDY:

This cross sectional study was conducted in Central Park Medical College during 2018. Total of 100 cases were enrolled by Non-Probability, consecutive

Sampling. Woman age 18-39 years, BMI <35, Infertility due to anovulation, Polycystic Ovarian Syndrome. After taking Informed consent, the demographic information (name, age, contact, BMI) was noted. Then subjects were divided on random basis in two categories by utilizing lottery method. Females of both groups were counseled about dietary modification and encouraged to do brisk walk for 30 min twice a day. Females in group A were given Letrozole 2.5mg once a day for three days (from day 3 to day 7) for three cycles and metformin 1500mg (500mg 3 times a day) daily for three months, while females in group B were given Letrozole 2.5mg once a day for three days (from day 3 to day 7) for three cycles. Then they were followed up in OPD for 3 cycles. In all 3 cycles TVS was done on day 12 to access the number of follicles and to measure the size of largest follicle, and on day 21 of cycle progesterone level will be assessed for confirmation of ovulation induction.(as per operational definition). All the data was recorded in especially designed proforma.

Statistical analysis

SPSS version 20 was used by researchers to analyse the data gathered. Both BMI & age were studied for Mean & S.D. Ovulation induction was studied and Percentage along with frequency was calculated.

RESULTS:

In Group-A mean age of women was 28.18 ± 6.58 years. In Group-B mean age of women was 27.08 ± 5.15 years. In Group-A minimum and maximum age of women was 18 and 39 years while in Group-B this was 18 and 37 years respectively (Table-1).

As per body mass index criteria in Group-A 20(20%) women were having normal BMI, 44(44%) were overweight and 36(36%) were obese. In Group-B 20(20%) women were having normal weight, 59(59%) were overweight and 21(21%) were obese.

TABLE-1: Age distribution of patients

	Group-A	Group-B
n	100	100
Mean	28.18	27.08
SD	6.585	5.154
Minimum	18	18
Maximum	39	37

Group-A= Letrozole + Metformin

Group-B= Letrozole

TABLE-2: Descriptive statistics for body mass index of women

	Group-A	Group-B
n	100	100
Mean	28.059	27.544
SD	2.8211	2.5492
Minimum	23.0	23.0
Maximum	32.0	31.9

TABLE-3: Ovulation induction in study groups

Ovulation Induction	Group-A	Group-B	Total
Yes	89(89%)	60(60%)	149
No	11(11%)	40(40%)	51
Total	100	100	200

Chi-Square Test= 22.13

p-value= 0.000

DISCUSSION:

PCOS is considered one of most prevalent endocrine abnormalities in women who have reached childbearing age (6.8%), and subsequently causes infertility because of ovulation disturbance [5]. 75% of total disturbances are related to PCOS. Ovulation induction is therapy opted for treatment of PCOS. There are many treatment options available for this but none is solely to be considered for therapy. Clomiphene, metformin, letrozole, gonadotropins, ovaries cauterization & wedge resection, gonadotrophin-releasing hormone agonists and reproductive assisted technology [6].

Almost 50%–70% of total women affected with PCOS have somewhat insulin resistance. Hyperinsulinemia may lead to hyperandrogenism, which causes signs & symptoms of the PCOS. A biguanide, Metformin treats insulin resistance in cases with co-occurrence of PCOS reducing production of endrogens in ovaries affecting follicular development & ovulation induction. Also, many reports state that the metformin plus CC in case of CC-resistant PCOS is particularly effective in inducing ovulation for 68.6%–77.7% of subjects [7].

Letrozole is in pharmacological class of 3rd generation of aromatase inhibitor. Its administration during follicular stage facilitates ovulation by stimulating the hypothalamic pituitary axis of the E^{-ve} feedback, thus elevating FSH secretion, stimulating development of follicles in ovaries [8,9]. It elevates FSH effects on follicles sensitivity by androgens accumulation. The advantages of letrozole in CC-resistant PCOS cases are reported with therapy using 2.5 mg doses on daily basis after 3–7 days of menstruation in trials [10, 11].

CONCLUSION:

It is concluded that letrozole plus metformin is more effective as therapy for the induction of ovulation in

females presenting with polycystic ovarian syndrome as compared to letrozole alone.

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