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Original Research Article

Effect of letrozole and dexamethasone combination therapy compared to letrozole alone for ovulation induction in infertile women with polycystic ovary syndrome: a randomized controlled trial

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ABSTRACT

Background: Polycystic ovary syndrome (PCOS), a common cause of anovulatory infertility, affects 5–10% of reproductive-age women. Hyperandrogenemia disrupts follicular development. Dexamethasone may enhance folliculogenesis. This study compared letrozole plus dexamethasone versus letrozole alone for ovulation induction in infertile PCOS women.
Methods: This randomized controlled trial was conducted at the Department of Reproductive Endocrinology and Infertility, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from September 2023 to August 2024. 72 infertile PCOS women (18-35 years) were allocated into 2 groups. Group A (36 patients) received letrozole 7.5 mg/day for 5 days with dexamethasone 0.5 mg twice daily for 10 days from cycle day 2. Group B (36 patients) received letrozole 7.5 mg/day for 5 days from cycle day 2 for 3 cycles. TVS folliculometry assessed ovarian response on day 12-14. HCG injection was given for mature follicles. Ovulation was confirmed by mid-luteal progesterone and pregnancy by serum B-HCG.
Results: Group A showed more mature follicles than group B, notably in the 3rd cycle (76.7% vs 51.6%, $p<0.05$). Endometrial thickness was greater in Group A in both 2nd (7.7±1.4 vs 6.6±0.9 mm, $p<0.05$) and 3rd cycles (7.9±1.4 vs 6.7±1.0 mm, $p<0.05$). Ovulation rates were higher in Group A, reaching significance in the 3rd cycle (76.7% vs 51.6%, $p<0.05$). Cumulative pregnancy rates favored Group A (30.6% vs 19.4%), though not significantly.
Conclusions: Letrozole plus dexamethasone is more effective than letrozole alone in enhancing follicular development, endometrial thickness, ovulation, and pregnancy outcomes in women with PCOS.

Keywords: PCOS, Letrozole, Dexamethasone, Ovulation induction

INTRODUCTION

Polycystic ovary syndrome (PCOS) is one of the most common endocrinopathies in women of reproductive age, representing a major health issue affecting physiological, metabolic, and reproductive dimensions.[1] In young women, PCOS is the most common cause of chronic anovulation and hyperandrogenism, affecting 5–10% of females.[2] Chronic anovulation causes infertility in 55 to 75% of women with PCOS.[3] Two of three requirements must be met for PCOS diagnosis using Rotterdam criteria: polycystic ovaries on ultrasonography, oligo/anovulation, and hyperandrogenism (clinical or biochemical). Other causes of anovulatory infertility and androgen excess must be ruled out.[4] PCOS has a complex pathogenesis that remains largely unknown. It is multifactorial, involving

uncontrolled ovarian steroidogenesis, abnormal insulin signaling, oxidative stress, and genetic/environmental factors. Theca cells in PCOS patients release high androgens due to intrinsically activated steroidogenesis.[5]

In PCOS, anovulation causes infertility, with its dysfunction linked to biochemical factors. Chronic hyperandrogenism is the main biochemical abnormality, often associated with increased androgen production by adrenal glands and ovaries.[6] Testosterone is the most potent androgen, with slight increases in free testosterone causing substantial hyperandrogenism. The ovaries and adrenal glands each produce 25% of testosterone, while 50% comes from peripheral androstenedione conversion.[7] Ovarian androgen production is elevated in PCOS women, with adrenal synthesis increasing in 50–70% of cases concurrently.[8] Hyperandrogenism negatively impacts fertility by inhibiting ovarian follicle formation through Follicle-stimulating hormone down regulation in granulosa cells, leading to follicular atresia.[9] It also reduces progesterone production by the corpus luteum, causing luteal phase deficit, implantation failure, and increased abortion risk.[10]

Ovulation induction is necessary because women with PCOS experience anovulatory infertility. Women with PCOS have had success with several methods of ovulation induction and fertility treatment.[11] For anovulatory women, clomiphene citrate (CC) has been the first-line reproductive treatment for the past few decades. In a recent Cochrane review and large randomized controlled trial (RCT), letrozole, an aromatase inhibitor, showed higher ovulation and live birth rates in PCOS women compared to CC.[11,12] Letrozole is advised as first-line treatment for PCOS women by several studies and guidelines.[1] Letrozole induces ovulation in 62% of patients, and 14.7% become pregnant.[13] Letrozole is safe and has no adverse effects on the fetus. It lowers estrogen release and induces increased gonadotropins, leading to ovarian follicle maturation. For ovulation and pregnancy in PCOS patients, letrozole is safer and more effective than CC.[14]

Dexamethasone (glucocorticoids) decreases adrenal androgen production by inhibiting adrenocorticotropic hormones through negative feedback.[15] Reduced adrenal androgen secretion could result in a 40% decrease in total circulating androgen levels.[16] Insulin-like growth factor-1 (IGF-1) regulates ovarian response to gonadotropin stimulation. Glucocorticoids can increase serum levels of growth hormone and IGF-1.[17] For individuals over 35 at risk of low ovarian response, dexamethasone is indicated as an adjuvant due to its effect on ovarian response to gonadotropins.[18] Adding glucocorticoid to CC in CC-resistant PCOS yields higher ovulation and pregnancy rates without adverse anti-estrogenic effects on the endometrium.[19]

Letrozole with dexamethasone is more effective than CC and dexamethasone for ovulation and pregnancy.[20] With glucocorticoids reducing androgen levels, folliculogenesis might improve. Thus, dexamethasone as adjuvant therapy with letrozole may benefit anovulatory subfertile PCOS women.

Objective

The objective of this study was to assess and compare the effects of letrozole and dexamethasone combination therapy with that of letrozole alone for ovulation induction in infertile women with polycystic ovary syndrome.

METHODS

This randomized controlled clinical trial was conducted at the Department of Reproductive Endocrinology and Infertility, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from September 2023 to August 2024. A total of 72 infertile women with PCOS diagnosed by Rotterdam criteria were randomly allocated into 2 groups. Group A (36 patients) received letrozole 7.5 mg/day for 5 days with dexamethasone 0.5 mg twice daily for 10 days from day 2 of the cycle. Group B (36 patients) received letrozole 7.5 mg/day for 5 days from day 2 of the cycle for 3 cycles. Both groups underwent TVS for folliculometry on day 12-14 to assess ovarian response (developing follicles, mature follicles and endometrial thickness). Ovulation was determined by mid-luteal serum progesterone. Pregnancy was confirmed by β-hCG estimation. In Group A, 2 patients were lost to follow-up in the 2nd cycle, and in Group B, 2 patients were lost in the 2nd cycle and 1 patient in the 3rd cycle.

Inclusion criteria

Inclusion criteria are diagnosed with PCOS according to the Rotterdam criteria; aged between 18 and 35 years; body mass index (BMI) between 18.5 and 29.9 kg/m²; history of infertility for ≥1 year; selected for ovulation induction.

Exclusion criteria

Exclusion criteria are male factor infertility; presence of other infertility causes (e.g., endometriosis, tubal or uterine abnormalities); thyroid disorders or hyperprolactinemia; history of medical diseases (e.g., uncontrolled diabetes mellitus, uncontrolled hypertension, kidney or liver disease); hypersensitivity to letrozole; contraindications to dexamethasone (e.g., immunosuppressive conditions, uncontrolled infections, known hypersensitivity, systemic fungal infections, or concurrent treatment with live virus vaccines); current metformin therapy; use of hormonal contraceptives within the last three months.

Study procedure

Informed written consent was obtained before the study. Participants underwent baseline assessments, including infertility investigations and hormonal profiling (FSH, LH,

and testosterone levels). Socio-demographic and clinical data were recorded. Randomization used a computer-generated permuted block sequence. Allocation concealment was used in sealed opaque envelopes containing treatment assignments. Participants were randomized into two groups: Group A received letrozole 7.5 mg daily for 5 days and dexamethasone 0.5 mg twice daily for 10 days starting from day 2 of menstruation or withdrawal bleeding, for three consecutive cycles. Group B received letrozole 7.5 mg daily for 5 days starting from day 2 of menstruation or withdrawal bleeding, for three consecutive cycles. Participants were advised against taking additional medications without consulting the investigator. Ovarian response was monitored by transvaginal ultrasonography (Mindray DP-2200 plus) from day 12 to 14. When a follicle reached 18–25 mm, an intramuscular injection of 5,000 IU human chorionic gonadotropin (hCG) was administered, followed by timed intercourse. Ovulation was confirmed by mid-luteal serum progesterone measurement, with levels >3 ng/ml considered ovulatory. Monthly follow-ups included baseline visits, follicular monitoring, and progesterone assessments. Non-pregnant participants repeated the treatment protocol in subsequent cycles. Clinical records were maintained for each subject, with data collected through interviews, examinations, and investigations. Participants were contacted via telephone to monitor compliance and assess side effects.

Ethical considerations

Ethical approval was obtained from the Institutional Review Board (IRB) of BSMMU. The study followed ethical principles of the Declaration of Helsinki (1964) and subsequent revisions. Participants were informed about the study's nature, objectives, procedures, and rights, including withdrawal without reason. Written informed consent was obtained before enrollment. The study posed minimal risks. Confidentiality was maintained; only the principal investigator accessed identifiable data. No investigational drugs were used; letrozole and dexamethasone are established agents in reproductive medicine.

Statistical analysis

All statistical analyses were performed using the Statistical Package for Social Sciences (SPSS) version 26.0 for Windows (SPSS Inc., Chicago, IL, USA). Continuous variables were presented as means and standard deviations, while categorical variables were expressed as frequencies and percentages. The Chi-square test was used to analyze categorical variables, and the independent Student’s t-test was used for continuous variables. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1 shows that the mean age was found to be 24.6±4.0 years in group A (letrozole plus dexamethasone) and 25.2±3.8 years in group B (letrozole alone group). The majority of the patients were housewives and came from rural areas in both groups. Most of the patients had primary subfertility in both groups. The two groups had no significant difference (p>0.05).

Table 2 shows that the majority, 35(97.2%), of patients had polycystic ovaries in group A (letrozole plus dexamethasone group) and 34 (94.4%) in group B (letrozole alone group). 33 (91.7%) patients had oligomenorrhea in group A and 31(86.1%) in group B. 31(86.1%) patients had hyperandrogenism in group A and 32(88.9%) in group B. The mean BMI was 26.7±1.9 kg/m^2 in group A and 26.6±2.3 kg/m^2 in group B. The differences between the two groups were not statistically significant (p>0.05).

Table 3 shows that the mean serum AMH, LH, and testosterone levels were not statistically significant (p>0.05) between the two groups.

Table 4 shows that ovarian response in terms of proportion of participants having developing follicles was not statistically significant in the 1st cycle, but in the 2nd cycle and 3rd cycles was significantly higher in group A when compared between the two groups.

Table 5 shows that ovarian response in terms of proportion of participants having mature follicles was not statistically significant in the 1st cycle and 2nd cycle, but in the 3rd cycle, it was significantly higher in group A when compared between the two groups.

Table 6 shows that mean endometrial thickness in the 2nd cycle (7.7±1.4 vs 6.6±0.9 mm, p value <0.05) and in the 3rd cycle (7.9±1.4 vs 6.7±1.0 mm, p value <0.05) were significantly higher in group A (letrozole plus dexamethasone) than in group B (letrozole alone). Endometrial thickness in 1st cycle was not statistically significant between the two groups.

Table 7 shows that ovulation, which is determined by mid-luteal serum progesterone (>3.0 ng/ml), was not statistically significant in the 1st cycle and 2nd cycle, but in the 3rd cycle, it was significantly higher in group A when compared between the two groups. The difference between the cumulative ovulation rate was not statistically significant.

Table 8 shows that the cumulative pregnancy rate is 30.6% in the letrozole plus dexamethasone group and 19.4% in the letrozole only group, but it was not statistically significant when compared between the two groups.

Table 9 shows no statistically significant difference regarding side effects between the two groups.

Table 1: Socio-demographic characteristics of the study participants (n=72).

Characteristics		Group A (n=36)		Group B (n=36)		P value
		Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	
Age (years)	18-20	6	16.7	2	5.6	
	21-26	17	47.2	19	52.8	
	27-30	10	27.8	12	33.3	
	31-35	3	8.3	3	8.3	
Mean±SD		24.6±4.0		25.2±3.8		0.492
Range (min-max)		19-33		19-34		
Occupational status	Housewife	26	72.2	26	72.2	0.904
	Service	5	13.9	6	16.7	
	Teacher	5	13.9	4	11.1	
Residence	Rural	19	52.8	16	44.4	0.479
	Urban	17	47.2	20	55.6	
Household income (monthly)		39166.7±19694.1		39583.3±19470.7		0.928
Range (min-max)		15000-100000		15000-100000		
Type of infertility	Primary	30	83.3	34	94.4	0.13
	Secondary	6	16.7	2	5.6	
Duration of infertility (years)		3.7±2.0		4±2.5		0.607
Range (min-max)		1.5-10		1.5-11		

Table 2: Clinical characteristics of the study participants (n=72).

Clinical characteristics	Group A (n=36)		Group B (n=36)		P value
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	
Oligomenorrhea	33	91.7	31	86.1	0.355
Hyperandrogenism	31	86.1	32	88.9	0.722
Polycystic ovaries	35	97.2	34	94.4	0.5
BMI (kg/m^2)					
18.5-24.9	8	22.2	6	16.7	
25.0-29.9	28	77.8	30	83.3	
Mean±SD	26.7±1.9		26.6±2.3		0.792
Range (min-max)	23.2-29.6		19.7-29.8		

Table 3: Hormonal parameters of the study participants (n=72).

Laboratory parameters	Group A (n=36)	Group B (n=36)	P value
	Mean±SD	Mean±SD	
Serum AMH (ng/ml)	7.6±3.3	7.9±2.8	0.709
Serum LH (mIU/ml)	6.9±4.6	7.2±2.3	0.772
Serum testosterone (ng/dl)	61.8±22.3	61.1±20.3	0.894

Table 4: Proportion of participants having developing follicles (≥14 mm) compared between two groups (n=72).

Developing follicles	Group A		Group B		P value
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	
1st cycle	**(n=36)**		**(n=36)**		
≥14 mm	27	75	20	55.6	0.083
<14 mm	9	25	16	44.4	
2nd cycle	**(n=33)**		**(n=34)**		
≥14 mm	26	78.8	19	55.9	0.046

Continued.

Developing follicles	Group A		Group B		P value
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	
<14 mm	7	21.2	15	44.1	
3rd cycle	(n=30)		(n=31)		
≥14 mm	24	80	16	51.6	0.02
<14 mm	6	20	15	48.4	

Table 5: Proportion of participants having mature follicles (18-25 mm) compared between two groups (n=72).

Mature follicles	Group A		Group B		P value
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	
1st cycle	(n=36)		(n=36)		
(18-25 mm)	25	69.4	19	52.8	0.147
< 18 mm	11	30.6	17	47.2	
2nd cycle	(n=33)		(n=34)		
(18-25 mm)	25	75.8	19	55.9	0.087
< 18 mm	8	24.2	15	44.1	
3rd cycle	(n=30)		(n=31)		
(18-25 mm)	23	76.7	16	51.6	0.042
< 18 mm	7	23.3	15	48.4	

Table 6: Comparison of endometrial thickness between two groups (n=72)

Endometrial thickness (mm)	Group A		Group B		P value
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	
1st cycle	(n=36)		(n=36)		
≥7	25	69.4	19	52.8	
<7	11	30.6	17	47.2	
Mean±SD	7.2±1.3		6.7±1.1		0.081
2nd cycle	(n=33)		(n=34)		
≥7	25	75.8	19	55.9	
<7	8	24.2	15	44.1	
Mean±SD	7.7±1.4		6.6±0.9		0.001
3rd cycle	(n=30)		(n=31)		
≥7	23	76.7	16	51.6	
<7	7	23.3	15	48.4	
Mean±SD	7.9±1.4		6.7±1.0		0.001

Table 7: Comparison of ovulation rate between two groups (n=72).

Ovulation rate	(Group A)		(Group B)		RR (95% CI)	P value
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)		
1st cycle	(n=36)		(n=36)			
> 3.0	25	69.4	19	52.8	1.31 (0.90-1.91)	0.147
≤ 3.0	11	30.6	17	47.2		
2nd cycle	(n=33)		(n=34)			
>3.0	25	75.8	19	55.9	1.35 (0.95-1.93)	0.087
≤ 3.0	8	24.2	15	44.1		
3rd cycle	(n=30)		(n=31)			
> 3.0	23	76.7	16	51.6	1.48 (1.00-2.20)	0.042
≤ 3.0	7	23.3	15	48.4		
Cumulative ovulation rate	(n=36)		(n=36)			
Yes	27	75	20	57.6	1.35 (0.95-1.91)	0.083
No	9	25	16	42.4		

Table 8: Comparison of pregnancy rate between two groups (n=72).

Pregnancy rate	(Group A)		(Group B)		RR (95%CI)	P value
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)		
1st cycle	(n=36)		(n=36)			
Yes	1	2.8	0	0	-	0.50
No	35	97.2	36	100		
2nd cycle	(n=33)		(n=34)			
Yes	3	9.1	2	5.9	1.54 (0.27-8.66)	0.486
No	30	90.9	32	94.1		
3rd cycle	(n=30)		(n=31)			
Yes	7	23.3	5	16.1	1.44 (0.51-4.06)	0.479
No	23	76.7	26	83.9		
Cumulative pregnancy rate	(n=36)		(n=36)			
Yes	11	30.6	7	19.4	1.57 (0.68-3.59)	0.276
No	25	69.4	29	80.6		

Table 9: Side effects of study participants (n=72).

Side effects	(Group A) (n=36)		(Group B) (n=36)		P value
	Frequency (N)	Percentage (%)	Frequency (N)	Percentage (%)	
Headache	3	8.3	1	2.8	0.307
Mood change	2	5.6	1	2.8	0.500
Hot flash	1	2.8	2	5.6	0.500
Nausea/ vomiting	4	11.1	2	5.6	0.337
Dizziness	1	2.8	0	0	0.500

DISCUSSION

PCOS is a complex condition impacting a woman's reproductive, metabolic, and cardiovascular health throughout her life. Approximately 75% of women with PCOS experience infertility due to anovulation.[20] The standard treatment for infertility in PCOS is ovulation induction, aiming to stimulate the maturation of a single dominant follicle and achieve a singleton pregnancy.[21] Available ovulation induction protocols include CC, aromatase inhibitors (e.g., letrozole), gonadotrophins, and adjuvant corticosteroids like dexamethasone (DEX), each with distinct mechanisms and outcomes.

Dexamethasone, first used in 1953, reduces adrenal androgen levels, thereby supporting follicular development.[22] Studies have shown that low-dose dexamethasone can enhance ovarian responsiveness, making it a simple, affordable, and effective adjuvant for ovulation induction.[17,23] When combined with other agents, dexamethasone has been shown to improve folliculogenesis, ovulation, and pregnancy outcomes.[20]

Letrozole, a third-generation aromatase inhibitor, has emerged as a first-line agent for ovulation induction in PCOS.[24] By inhibiting estrogen synthesis, letrozole promotes gonadotropin release and follicular sensitivity, thereby enhancing ovulation with minimal adverse effects and a favorable pharmacokinetic profile.[25] Letrozole is considered a safer alternative to gonadotrophins and surgical interventions.[14]

The present study evaluated the combination of letrozole and dexamethasone versus letrozole alone in 72 PCOS patients (36 per group). The mean age of participants was comparable between the groups (24.6±4.0 vs. 25.2±3.8 years), aligning with earlier studies [8, 26]. Most participants had primary infertility—83.3% in the combination group and 94.4% in the letrozole-only group—with no significant intergroup difference. These figures are consistent with the findings of Zhu et al and Dai et al.[27,28]

The average duration of infertility (3.7±2.0 vs. 4.0±2.5 years) did not differ significantly between the groups. Esmaeilzadeh et al described the mean duration of infertility as 2.98±1.85 years in the Dex+CC group and 3.15±1.45 years in the CC+placebo group, which was insignificant between the two groups.[26]

In this current study, the majority, 35 (97.2%), of patients had polycystic ovaries in group A and 34 (94.4%) in group B. 33 (91.7%) patients had oligomenorrhea in group A and 31(86.1%) in group B. 31 (86.1%) patients had hyperandrogenism in group A and 32(88.9%) in group B. The differences between the two groups were not

statistically significant (p>0.05). In a study by Basirat et al., irregular menstruation was observed in 65.0% of the dexamethasone group and 70.0% of the placebo group.[29] Hirsutism was 80.0% and 74.5% in the dexamethasone group and the placebo group, respectively. These findings are consistent with our findings.

In this study, the mean BMI was 26.7±1.9 kg/m^2 in group A and 26.6±2.3 kg/m^2 in group B. The differences between the two groups were not statistically significant (p>0.05). Esmaeilzadeh et al. obtained that the mean BMI was 27.56±3.28 kg/m^2 in the Dex+CC group and 27.1±2.96 kg/m2 in the CC+placebo group, which was not significant between the two groups.[26] Begum et al described a patient who was taken as a control (letrozole alone) and experimental (letrozole plus dexamethasone) and the baseline parameters, such as BMI, had a mean of 23.63±3.23 kg/m^2.[8] Basirat et al demonstrated that the mean BMI was not statistically significant between the dexamethasone and placebo groups, which is consistent with my study.[29]

Biochemical parameters such as AMH, LH, and testosterone levels were not significantly different between groups, similar to studies by Begum et al. and Basirat et al.[8,29] These uniform baseline characteristics ensure comparability between groups and minimize confounding.

Follicular development across cycles revealed a significant advantage for the combination group during the 2nd (78.8% vs. 55.9%) and 3rd cycles (80.0% vs. 51.6%), indicating enhanced ovarian responsiveness with dexamethasone. Although the difference in the 1st cycle was insignificant, a consistent trend was observed. Shaheen et al. found similar improvements in follicular stimulation with DEX combined with letrozole or CC.[20]

Regarding mature follicles, the combination group also showed significantly higher rates during the 3rd cycle (76.7% vs. 51.6%), though differences in the 1st and 2nd cycles were not statistically significant. These results align with Shaheen et al, who noted improved follicle maturation in the DEX group.[20]

Endometrial thickness, an important marker of uterine receptivity, was significantly greater in the combination group during the 2nd and 3rd cycles. Farzaneh et al and Neblett et al observed that although endometrial thickness was not always significantly different, adequate thickness (>7 mm) was commonly achieved in ovulatory cycles, as seen in our study.[17,30]

Ovulation, assessed via mid-luteal progesterone levels, showed significantly higher rates in the combination group in the 3rd cycle (76.7% vs. 51.6%) and cumulatively (75.0% vs. 57.6%). Although differences in earlier cycles were not significant, a consistent upward trend in ovulation rates with dexamethasone addition was evident. Shaheen et al. and Neblett et al. reported similar findings, with dexamethasone increasing ovulation in letrozole-resistant PCOS cases.[20,30]

Regarding pregnancy outcomes, the combination group showed higher pregnancy rates in all cycles and cumulatively (30.6% vs. 19.4%), though the differences were not statistically significant. This trend aligns with results from Begum et al, Farzaneh et al, Shaheen et al, who found improved pregnancy rates with dexamethasone.[8,17,20] Conversely, Esmaeilzadeh et al. found no significant difference, possibly due to different drug regimens or sample sizes.[26]

Adverse effects were mild and similar between groups, including headache, mood changes, hot flashes, nausea, and dizziness. None of the patients experienced serious side effects, confirming DEX's tolerability. Regarding side effects, both groups in the Shaheen et al. study demonstrated that all medications were generally tolerated because no patient reported experiencing any negative effects.[20] According to Esmaeilzadeh et al, dexamethasone was well tolerated, and none of the patients reported any adverse effects.[26] There have been no reports of negative effects associated with dexamethasone.[29] These findings are consistent with our findings.

This study supports the use of dexamethasone as a beneficial adjuvant to letrozole in inducing ovulation in PCOS patients. The combination showed better outcomes in follicular development, ovulation, endometrial thickness, and pregnancy rates without added risks or adverse effects. These findings reinforce previous research advocating the synergistic role of dexamethasone in improving ovulation induction protocols in women with PCOS.

Limitations of the study

This study has several limitations. It was conducted over a short period, which may have limited observation of long-term effects and outcomes. Both participants and investigators were not blinded after randomization, introducing possible bias in outcome assessment. The study involved a small sample size from a single center in Dhaka city, compromising external validity and generalizability. The study faced constraints due to limited resources, which impacted the research scope.

CONCLUSION

Letrozole plus dexamethasone combination therapy is more effective than letrozole alone in terms of a greater number of participants having developed follicles, mature follicles, optimum endometrial thickness, and higher ovulation rate in infertile women with polycystic ovary syndrome. So, letrozole along with dexamethasone may be a better ovulation-inducing regimen for infertile women with polycystic ovary syndrome.

Recommendations

Future studies should conduct multi-centered, long-term trials with larger sample sizes to enhance reliability and generalizability. Implementing a double-blind randomized controlled trial (RCT) would minimize bias and allow more accurate assessment of letrozole and dexamethasone combination therapy on pregnancy outcomes and live birth rates. Future investigations could explore varying doses, treatment durations, and cycles of dexamethasone to identify optimal regimens for achieving standard ovarian response.

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