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*Original Article*

# Letrozole yields superior pregnancy outcomes and safety profile compared with clomiphene citrate in intrauterine insemination cycles: a propensity score matching analysis

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**Abstract:** Objective: By using the propensity score matching (PSM) method, this study compared the pregnancy outcomes of two ovulation induction regimens, clomiphene citrate (CC) and letrozole (LE), in intrauterine insemination (IUI) cycles. It aimed to evaluate the impact of these regimens on the clinical pregnancy rate, live birth rate, safety, and cost-effectiveness. Methods: Patients who underwent IUI with CC or LE monotherapy for ovulation induction from May 2024 to August 2025 were included. Baseline data and ovulation induction-associated parameters were retrieved from the electronic medical record system, and confounders were balanced by PSM. The clinical pregnancy rate and live birth rate served as the primary outcome measures of this study, while the biochemical pregnancy rate, implantation rate, OHSS incidence, multifetal gestation rate, and treatment cost constituted the secondary measures. Results: 216 patients (108 each in the CC and LE groups) were included. Higher clinical pregnancy and live birth rates were confirmed in the LE group compared to the CC group ($P<0.05$). In the LE group, the first-trimester pregnancy rate and the second-trimester pregnancy continuation rate were superior ($P<0.05$). Concerning the implantation rate, the singleton pregnancy rate was higher and the multifetal gestation rate was lower in the LE group ($P<0.05$). The LE group also performed better in terms of Estradiol ($E_2$) levels on the day of human chorionic gonadotropin (HCG) administration, with an elevated percentage of type A endometrium ($P<0.05$). Conclusions: LE shows higher pregnancy efficiency, better endometrial receptivity, and lower risk of multifetal gestation in IUI cycles.

**Keywords:** Clomiphene citrate, letrozole, intrauterine insemination, pregnancy outcomes, propensity score matching

## Introduction

Intrauterine insemination (IUI) is recommended as the first-line assisted reproductive technology for couples with mild to moderate infertility, with an overall clinical pregnancy rate of 15-25% per cycle [1]. Ovulation induction is the cornerstone of IUI success, as it directly affects follicular quality, endometrial receptivity, and ultimately embryo implantation [2]. Among available ovulation induction agents, clomiphene citrate (CC) has been used for decades due to its low cost [3], but its anti-estrogenic effect often leads to poor endometrial development (endometrial thickness <7 mm in 15-20% of patients) and abnormal cervical mucus, limiting pregnancy potential [4]. Letrozole (LE), a third-generation aromatase inhibitor, has gained attention for its ability to promote monofollicular development and avoid anti-estrogenic side effects [5], but its comparative efficacy and safety with CC in IUI cycles remain inconsistent across studies, especially regarding long-term outcomes such as live birth rate and multifetal gestation risk. Nevertheless, most of these conclusions are derived from small-sample or non-randomized controlled studies, and are affected by confounders such as patient age, body mass index (BMI), and basal endocrine status, resulting in significant heterogeneity of the results [6, 7]. For example, Collée et al. reported a higher live birth rate by LE than by

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CC [8], while Abu-Zaid et al. indicated no statistical difference between the two [9].

Against this background, this study adopted the retrospective propensity score matching (PSM) method to balance the differences between groups by matching baseline characteristics, aiming to more objectively compare the pregnancy outcomes of CC and LE protocols in IUI cycles. With PSM, the selection bias can be reduced, thus providing high-level evidence-based support for clinical protocol selection. The findings of this study have important clinical implications: optimizing ovulation induction strategies for IUI cycles can improve treatment efficiency, reduce complications such as multifetal pregnancy and OHSS, and reduce the physical and economic burden on patients. For clinical practice, the results can help physicians select appropriate ovulation induction agents based on patient characteristics, further promoting the standardization and individualization of assisted reproductive technology.

## Materials and methods

### *Research design*

This study adopts a single-center retrospective cohort design, employing PSM to control confounders for comparative analyses of pregnancy outcomes between different ovulation induction schemes in IUI cycles. Approval has been granted by the First Affiliated Hospital of Nanjing Medical University's Ethics Committee (Approval No. 2021-SR-169). The need for patients' informed consent was waived due to the retrospective design. All patient data were handled anonymously to ensure adequate protection of patient privacy.

### *Research participants*

Patients undergoing IUI in our hospital from May 2024 to August 2025 were included. Inclusion criteria: (1) Female patients aged 20-38 years, infertility duration of 1-5 years; male partners aged 22-45 years with no severe systemic diseases; (2) Etiology of infertility confirmed by etiological examination: Mild-to-moderate male factor infertility: Sperm progressive motility (PR) $\geq 10\times10^6$/mL, sperm concentration $\geq 5\times10^6$/mL, normal sperm morphology rate ≥4% (WHO 6th edition criteria); Cervical factor infertility: Abnormal cervical mucus (thick, sticky, poor stretchability) or cervical stenosis confirmed by cervical mucus examination and hysteroscopy; Unexplained infertility: No obvious abnormalities found in comprehensive examinations including hysterosalpingography (HSG), ovulation monitoring, male semen analysis, and thyroid function; (3) Bilateral or unilateral fallopian tube patency confirmed by HSG or laparoscopy (contrast agent passes smoothly, no obvious obstruction or hydrosalpinx); (4) Normal ovarian function: Basal follicle-stimulating hormone (FSH) 3.8-11.78 IU/L, anti-Müllerian hormone (AMH) 1.0-4.0 ng/mL, antral follicle count (AFC) ≥5; (5) Regular menstrual cycles (21-35 days), ovulatory cycles confirmed by basal body temperature measurement or luteal phase progesterone (P) ≥3.18 nmol/L; (6) No use of hormonal drugs (oral contraceptives, gonadotropins, etc.) in the past 3 months; (7) No contraindications to IUI, CC or LE; (8) Voluntary participation in the study.

Exclusion criteria: (1) Severe male factor infertility: PR $<10\times10^6$/mL, sperm concentration $<5\times10^6$/mL, or azoospermia; (2) Tubal factors: Bilateral salpingemphraxis, hydrosalpinx (moderate to severe), or tubal ligation history; (3) Endometriosis stage III-IV (revised American Fertility Society classification); (4) Polycystic ovary syndrome (PCOS): Meeting the Rotterdam criteria (oligomenorrhea/amenorrhea + clinical/biochemical hyperandrogenism + polycystic ovarian morphology, meeting 2 of 3); (5) Abnormal thyroid function: Thyroid-stimulating hormone (TSH) <0.27 mIU/L or >4.2 mIU/L, or free T3 (FT3)/free T4 (FT4) outside the normal range; Uncontrolled adrenal diseases (e.g., Cushing's syndrome, Addison's disease); (6) Uterine abnormalities: Mediastinal uterus, submucosal myoma (diameter ≥1 cm), intrauterine adhesion (moderate to severe), or endometrial polyps (diameter ≥1 cm); (7) Previous in vitro fertilization/intracytoplasmic sperm injection (IVF/ICSI) treatment history; (8) Severe systemic diseases: Severe hypertension (systolic blood pressure ≥160 mmHg, diastolic blood pressure ≥100 mmHg), diabetes mellitus (fasting blood glucose ≥7.0 mmol/L), liver and kidney dysfunction (ALT/AST >2 times the upper limit of normal, Cr >133 μmol/L), or malignant tumors; (9) Allergy to CC, LE or other drugs used in the study.

### *Medication regimen*

CC: Patients took CC orally at 50 mg/d on the 3rd-5th day of menstruation for 5 consecutive

days. LE: LE was given via oral administration at 2.5-5 mg/d [2.5 mg for Body Mass Index (BMI) <25 kg/m$^2$ and 5 mg for BMI ≥25 kg/m$^2$] on days 3-5 of menstruation, for 5 consecutive days. IUI: When the diameter of the dominant follicle reached 18-20 mm, HCG (5000-10000 IU) was injected intramuscularly. 36 hours later, IUI was performed (the male performed masturbation to collect sperm, which was then optimized and injected into the uterine cavity). Up to 2 IUI procedures were conducted per cycle (one day apart).

*Data collection*

Baseline data [age, BMI, infertility duration, basic Follicle-Stimulating Hormone (FSH)/Anti-Müllerian Hormone (AMH)/Estradiol ($E_2$)], implantation status (single birth, multiple birth) and yolk sac rate detected by ultrasound at 5 weeks of gestation. Pregnancy outcomes: ectopic pregnancy, pregnancy in the first trimester (HCG positive + fetal heart rate detected by ultrasound at 6 weeks of gestation), ongoing pregnancy in the second trimester (fetal heart rate detected by ultrasound at 12 weeks of gestation), term live birth (delivered at 37-41 weeks of gestation), preterm live birth (delivered at 28-36+6 weeks of gestation). Ovarian stimulation parameters: $E_2$ level on the day of HCG administration, endometrial resistance index (RI) and endometrial type (A/B/C) measured by ultrasound. The synchronous rate of follicular development (follicle size difference <2 mm) and the residual rate of small follicles (<14 mm) were recorded simultaneously. The incidence of ovarian hyperstimulation syndrome (OHSS) during pregnancy was recorded. Finally, economic indicators were recorded, including the cost of medication, the cost of monitoring (B ultrasound + blood tests, etc.) and the cost of additional examinations (such as hysteroscopy, AMH reexamination).

*Statistical methods*

PSM was performed with R software (MatchIt package) for 1-to-1 nearest neighbor matching, with a caliper value of 0.05. Matching variables included age, BMI, infertility duration, basic FSH, AMH, and AFC levels, as well as previous IUI procedures. Post-PSM balance was assessed, with a standardized mean difference (SMD) <0.1 suggesting balanced distribution. Categorical variables were tested by the $\chi^2$ test or Fisher's Exact test (the Kruskal-Wallis H test was used to compare the ranked data between the groups), while continuous variables were compared by the t-test if normally distributed or by the Mann-Whitney U test if not. Statistical significance is present when P<0.05.

## Results

*Comparison of baseline data before PSM*

After inclusion and exclusion criteria screening, a total of 128 patients in the LE group and 136 patients in the CC group were included. There were no significant differences in baseline data such as age, infertility duration and BMI between the two groups (P>0.05). However, more women in the LE group had a history of live birth and a history of alcohol abuse, but fewer women in the LE group had abnormal thyroid function compared to the CC group (P<0.05) (**Table 1**).

*Baseline data comparison post-PSM*

After PSM, 108 patients in LE group and 108 patients in CC group were finally included. After matching, there were no significant differences in all baseline data between the two groups (P>0.05). The SMD changes of the two groups before and after matching were plotted, and it could be seen that although there was no statistical difference in some data before matching, the SMD value was large (such as pregnancy history). After matching, the SMD of most variables approximated 0, which conformed to a normal distribution (**Table 2** and **Figure 1**).

*Comparison of implantation outcomes*

In terms of implantation, the LE group had a higher rate of singleton implantation and a higher rate of yolk sac detected by ultrasound than the CC group (P<0.05). In addition, the multiple implantation rate in CC group was higher than that in LE group (P<0.05), and the risk of pregnancy increased (**Table 3**).

*Comparison of pregnancy outcomes*

The ectopic pregnancy rate was not statistically different between the groups (P>0.05), but the pregnancy rate in the first trimester and the ongoing pregnancy rate in the second trimester in the LE group were 34.26% and 29.63%,

**Table 1.** Comparison of baseline data before PSM

| Projects | LE group (n=128) | CC group (n=136) | t (or $\chi^2$) | P |
|---|---|---|---|---|
| Age | 26.19±4.00 | 26.13±4.33 | 0.107 | 0.915 |
| Infertile years (years) | 2.79±1.41 | 2.89±1.41 | 0.581 | 0.562 |
| BMI (kg/m$^2$) | 22.05±2.62 | 21.95±2.41 | 0.285 | 0.776 |
| Causes of infertility | | | 4.512 | 0.105 |
| male factors | 69 (53.91) | 62 (45.59) | | |
| cervix | 46 (35.94) | 48 (35.29) | | |
| unknown | 13 (10.16) | 26 (19.12) | | |
| History of pregnancy | | | 3.494 | 0.062 |
| yes | 16 (12.50) | 8 (5.88) | | |
| no | 112 (87.50) | 128 (94.12) | | |
| History of miscarriage | | | 1.537 | 0.215 |
| yes | 14 (10.94) | 22 (16.18) | | |
| no | 114 (89.06) | 114 (83.82) | | |
| History of live birth | | | Fisher's exact | 0.046 |
| yes | 10 (7.81) | 3 (2.21) | | |
| no | 118 (92.19) | 133 (97.79) | | |
| $E_2$ (pg/mL) | 35.57±9.43 | 35.87±10.68 | 0.242 | 0.809 |
| FSH (IU/L) | 12.49±2.73 | 12.69±3.02 | 0.564 | 0.574 |
| AMH (ng/mL) | 2.69±1.02 | 2.78±0.93 | 0.772 | 0.441 |
| History of smoking | | | 1.651 | 0.199 |
| yes | 42 (32.81) | 55 (40.44) | | |
| no | 86 (67.19) | 81 (59.55) | | |
| History of alcoholism | | | 4.252 | 0.039 |
| yes | 27 (21.09) | 44 (32.35) | | |
| no | 101 (78.91) | 92 (67.65) | | |
| Thyroid function | | | 3.945 | 0.047 |
| normal | 107 (83.59) | 100 (73.53) | | |
| abnormal | 21 (16.41) | 36 (26.47) | | |

Note: CC: Clomiphene Citrate, LE: Letrozole, BMI: Body Mass Index, FSH: Follicle-Stimulating Hormone, AMH: Anti-Müllerian Hormone, $E_2$: Estradiol.

**Table 2.** Comparison of baseline data post-PSM

| Projects | LE group (n=108) | CC group (n=108) | t (or $\chi^2$) | P |
|---|---|---|---|---|
| Age | 25.91±3.74 | 25.89±3.87 | 0.036 | 0.971 |
| Infertile years (years) | 2.83±1.40 | 2.84±1.40 | 0.049 | 0.961 |
| BMI (kg/m$^2$) | 21.98±2.74 | 22.01±2.52 | 0.111 | 0.912 |
| Causes of infertility | | | 1.020 | 0.601 |
| male factors | 59 (54.63) | 54 (50.00) | | |
| cervix | 39 (36.11) | 46 (42.59) | | |
| unknown | 10 (9.26) | 8 (7.41) | | |
| History of pregnancy | | | 0.082 | 0.775 |
| yes | 7 (6.45) | 6 (5.56) | | |
| no | 101 (93.52) | 102 (94.44) | | |
| History of miscarriage | | | 0.053 | 0.818 |
| yes | 11 (10.19) | 10 (9.26) | | |
| no | 97 (89.81) | 98 (90.74) | | |

| | | | | |
|---|---|---|---|---|
| History of live birth | | | Fisher's exact | >0.999 |
| yes | 2 (1.85) | 2 (1.85) | | |
| no | 106 (98.15) | 106 (98.15) | | |
| $E_2$ (pg/mL) | 35.41±9.19 | 35.55±10.82 | 0.308 | 0.759 |
| FSH (IU/L) | 12.75±2.63 | 12.78±3.26 | 0.103 | 0.918 |
| AMH (ng/mL) | 2.80±1.07 | 2.73±1.05 | 0.061 | 0.951 |
| History of smoking | | | 0.085 | 0.771 |
| yes | 34 (31.48) | 36 (33.33) | | |
| no | 74 (68.52) | 72 (66.67) | | |
| History of alcoholism | | | 0.133 | 0.715 |
| yes | 19 (17.59) | 17 (15.74) | | |
| no | 89 (82.41) | 91 (84.26) | | |
| Thyroid function | | | 0.038 | 0.846 |
| normal | 93 (86.11) | 92 (85.19) | | |
| abnormal | 15 (13.89) | 16 (14.81) | | |

Note: CC: Clomiphene Citrate, LE: Letrozole, BMI: Body Mass Index, FSH: Follicle-Stimulating Hormone, AMH: Anti-Müllerian Hormone, $E_2$: Estradiol.

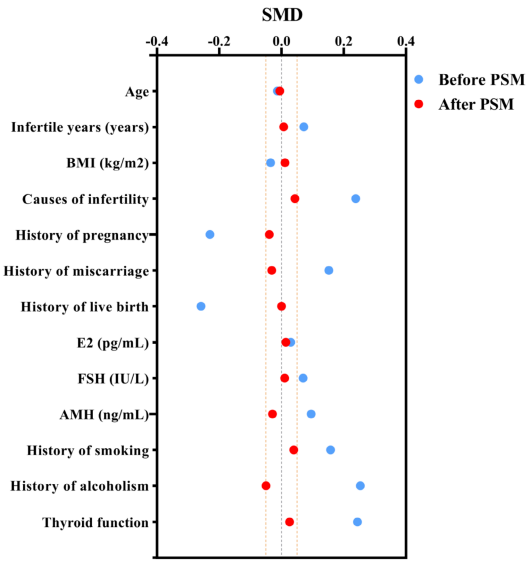


**Figure 1.** SMD of each data before and after PSM. Note: PSM: Propensity Score Matching, BMI: Body Mass Index, FSH: Follicle-Stimulating Hormone, AMH: Anti-Müllerian Hormone, $E_2$: Estradiol.

respectively, which were higher than those in the CC group (P<0.05). Notably, we determined a higher full-term live birth rate and a lower preterm live birth rate in the LE group compared to the CC group (P<0.05) (**Table 4**).

*Comparison of ovulation induction-associated parameters*

In comparison with the CC group, the $E_2$ level on HCG day was higher in the LE group (P<0.05). Ultrasonography showed that the RI in the LE group was lower than that in the CC group, and the proportion of type A intima in the LE group was higher than that in the CC group (P<0.05). Among the dominant follicles, the LE group had a significantly higher synchronous follicular development rate and a significantly lower residual rate of small follicles than the CC group (P<0.05) (**Table 5**).

*Comparison of the incidence of OHSS*

In terms of safety, severe OHSS occurred in neither group. With a similar incidence of moderate OHSS between the groups (P>0.05), the LE group displayed a lower incidence of mild OHSS than the CC group (P<0.05) (**Table 6**).

*Comparison of economic indicators*

Finally, regarding economics, the medication cost of the LE group was higher than that of the CC group (P<0.05). However, the comparison of monitoring costs and per capita additional examination costs showed no difference between the groups (P>0.05) (**Figure 2**).

## Discussion

In this study, the pregnancy outcomes of CC- versus Le-based ovulation induction schemes were compared by PSM. The results indicated the superiority of LE to CC in effectiveness, safety, and economic benefits. Specifically, the LE group demonstrated higher rates of clinical

**Table 3.** Comparison of implantation outcomes

| Groups | Singleton implantation | Multiple birth implantation | Ultrasound reveals a yolk sac |
|---|---|---|---|
| LE group (n=108) | 38 (35.19) | 4 (3.70) | 42 (38.89) |
| CC group (n=108) | 24 (22.22) | 13 (12.04) | 28 (25.93) |
| $\chi^2$ | 4.434 | Fisher's exact | 4.142 |
| P | 0.035 | 0.041 | 0.042 |

Note: CC: Clomiphene Citrate, LE: Letrozole.

**Table 4.** Comparison of pregnancy outcomes

| Groups | Ectopic pregnancy | Pregnancy in the first trimester | Pregnancy continued in the second trimester | Term live births | Premature live births |
|---|---|---|---|---|---|
| LE group (n=108) | 2 (1.85) | 37 (34.26) | 32 (29.63) | 22 (20.37) | 2 (1.85) |
| CC group (n=108) | 3 (2.78) | 24 (22.22) | 19 (17.59) | 8 (7.41) | 10 (9.26) |
| $\chi^2$ | Fisher's exact | 3.861 | 4.338 | 7.587 | Fisher's exact |
| P | >0.999 | 0.049 | 0.037 | 0.006 | 0.033 |

Note: CC: Clomiphene Citrate, LE: Letrozole.

**Table 5.** Comparison of ovulation induction-associated parameters

| Groups | $E_2$ level on HCG day (ng/mL) | Classification of intima | | | RI | Synchronization of follicular development | Small follicle residual rate |
|---|---|---|---|---|---|---|---|
| | | A | B | C | | | |
| LE group (n=108) | | 74 (68.52) | 17 (15.74) | 17 (15.74) | | 81 (75.00) | 11 (10.19) |
| CC group (n=108) | | 58 (53.70) | 20 (18.52) | 30 (27.78) | | 64 (59.26) | 24 (22.22) |
| $\chi^2$ or H | 8.482 | | 6.892 | | 4.487 | 6.064 | 5.762 |
| P | <0.001 | | 0.032 | | <0.001 | 0.014 | 0.016 |

Note: CC: Clomiphene Citrate, LE: Letrozole, RI: Resistance Index, HCG: Human Chorionic Gonadotropin.

**Table 6.** Comparison of the incidence of OHSS

| Groups | Mild | Moderate |
|---|---|---|
| LE group (n=108) | 5 (4.63) | 1 (0.93) |
| CC group (n=108) | 13 (12.04) | 4 (3.70) |
| $\chi^2$ | 3.879 | Fisher's exact |
| P | 0.049 | 0.369 |

Note: CC: Clomiphene Citrate, LE: Letrozole.

pregnancy, live birth, and first-trimester pregnancy than the CC group, but with lower economic benefits. Besides, an elevated singleton pregnancy rate and a reduced multifetal gestation rate were identified in the LE group. Furthermore, the LE group performed better in terms of the $E_2$ level on HCG day, and the percentage of type A endometrium. However, although monitoring costs were consistent between the two groups, medication costs increased in the LE group.

The significant advantages of pregnancy outcomes in L-treated patients may be related to LE's unique pharmacological characteristics. As the 3rd-generation aromatase inhibitor, LE can reduce the negative feedback of the hypothalamus-pituitary-ovary (HPO) axis by inhibiting estrogen synthesis, thus promoting follicular development [6, 10]. Compared with the anti-estrogen effect of CC that may inhibit endometrial proliferation and cervical mucus secretion [11], LE regulates estrogen receptors more gently, which helps to maintain ideal endometrial receptivity. In this study, the $E_2$ level on HCG day and the percentage of type A endometrium were all better in the LE group, which also suggests that LE may promote embryo implantation by optimizing the estrogen environment. Additionally, the higher follicular synchronization in the LE group helps reduce the risk of estrogen fluctuations caused by multi-follicular development and further enhances the pregnancy quality [12].

In terms of pregnancy outcomes, the term live birth rate was higher in the LE group, which may be related to the following factors: (1) Embryo

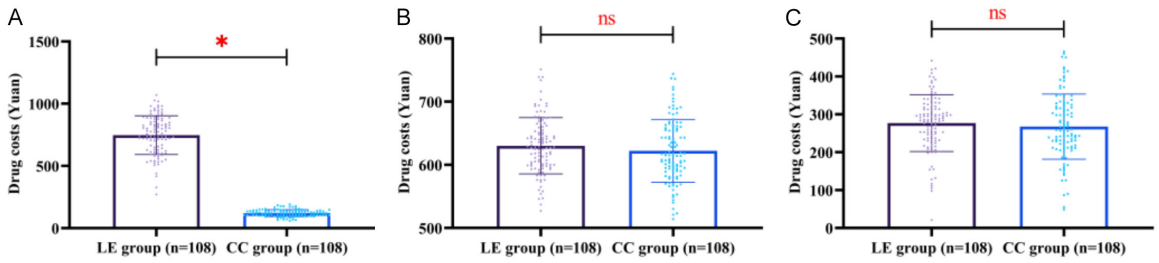


**Figure 2.** Comparison of economic indicators. A. Comparison of drug costs. B. Comparison of monitoring costs. C. Comparison of the costs of additional examinations. * indicates P<0.05 and ns indicates P>0.05. Note: CC: Clomiphene Citrate, LE: Letrozole.

quality improvement: LE reduces aneuploid embryo formation by promoting the uniform development of follicles [13]. (2) Maternal-fetal interface optimization: The increase in the percentage of type A endometrium suggests that LE may enhance the expression of endometrial receptivity markers like integrin and leukemia inhibitory factor [9]. (3) Oxidative stress reduction: The scavenging effect of LE metabolites on reactive oxygen species may alleviate the oxidative damage during early embryonic development [14]. Additionally, the incidence of mild OHSS in the LE group was lower, which may be related to the reduction of vascular permeability mediator release by LE. In vitro, LE was confirmed by Alabiad et al. to not activate the vascular endothelial growth factor (VEGF) pathway of the HPO axis [15]. Furthermore, increased $E_2$ levels on HCG day were observed in patients receiving LE, suggesting the superior synthesis efficiency of single follicle-derived estrogen that reduces the OHSS triggering threshold [16]. Notably, we noted a higher multifetal gestation rate in the CC group, possibly attributed to the "monofollicular development tendency" of LE. LE, by selectively inhibiting the CYP19A1 enzyme, reduces the conversion of androgens to estrogens [17]. CC, on the other hand, indirectly stimulates FSH secretion by antagonizing estrogen receptors, which easily induces the development of multiple dominant follicles [18]. Therefore, in patients with normal ovarian reserve function, LE can more precisely control follicle recruitment and reduce the risk of multiple pregnancies.

In previous research, the superior effect of LE to CC in pregnancy rates has also been confirmed [19]. Yet, Alhebshi et al. found no significant difference [20], which can be explained by the limited cases studied, insufficient statistical power to detect minor differences, and no PSM-based adjustment for confounders such as age and BMI. Based on our findings, it is recommended that LE be prioritized as the first-line ovulation-inducing drug in the IUI treatment of patients with mild to moderate infertility. It is particularly suitable for those with a thin endometrium or abnormal cervical mucus, as LE can avoid the anti-estrogenic effect of CC and improve endometrial receptivity and cervical mucus quality. Patients at high risk of PCOS are also feasible for LE treatment, given that the follicular synchronization effect of LE can reduce the risk of multiple follicular development and lower the incidence of OHSS and multiple pregnancies. However, for individuals with limited financial resources or those who have shown no response to LE in the past, CC can still be used as an alternative. Nevertheless, contrast-enhanced ultrasonography monitoring is required to control the number of follicles, plus close monitoring of the risk of early miscarriage.

However, this study has the following limitations, which may affect the generalizability of the results: (1) The retrospective design relies on electronic medical record data and lacks random grouping. Although PSM is used to control confounding factors, there may still be unmeasured confounders, such as the sperm DNA fragmentation rate of the male partner and the lifestyle of the female partner; (2) The study data are from a single center, which may not reflect the differences in protocols among different regions or centers; (3) Only the period from pregnancy to childbirth was followed, with no tracking of the long-term development of the offspring or the long-term maternal health outcomes. In the future, multi-center, large-sample RCTs with an extended follow-up period and

the incorporation of comprehensive indicators such as quality-of-life scores should be conducted to further verify the long-term benefits of LE.

## Conclusion

Compared with CC, the use of LE in IUI cycles contributes to a higher pregnancy rate, a lower miscarriage rate, and a lower risk of multiple pregnancies, without increasing the incidence of severe OHSS. Despite the relatively high cost of LE, its ability to optimize the endometrial environment, synchronize follicles, and ensure safety makes it the preferred option for patients with mild to moderate infertility.

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## Disclosure of conflict of interest

None.

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