

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 Jun 2026

Comparison of the Effectiveness of Letrozole with Estradiol on Frozen Embryo Transfer Cycle Outcomes in Women with Polycystic Ovarian Syndrome

Protocol summary

Study aim

The comparison of letrozole with estradiol on the outcomes of frozen embryo transfer cycles in women with polycystic ovarian syndrome

Design

A randomized controlled clinical trial, with parallel groups, single blinded, phase 3, with simple randomization method on 510 patients.

Settings and conduct

This study will be carried out at Yas Hospital (Tehran, Iran) on women with polycystic ovarian syndrome. The patients, the sonographer and the physician who will be responsible for administration of drugs will know about the interventions; the physician who will be responsible for embryo transferring and the statistician are unaware of the interventions.

Participants/Inclusion and exclusion criteria

Inclusion criteria of study: The women with polycystic ovarian syndrome; 18 - 40 years old; candidate of frozen embryo transfer Exclusion criteria of study: The other causes of hyperandrogenism and ovarian dysfunction; Basal FSH level >10 IU/L; History of recurrent miscarriage; History of congenital or acquired uterine malformations; History of male factor infertility

Intervention groups

In the control group, endometrial preparation will be done by traditional method with estrogen and progesterone containing drugs. In the study group, endometrial preparation will be done by letrozole.

Main outcome variables

Live Birth Rate

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20150105020558N3**

Registration date: **2021-03-02, 1399/12/12**

Registration timing: **prospective**

Last update: **2021-03-02, 1399/12/12**

Update count: **0**

Registration date

2021-03-02, 1399/12/12

Registrant information

Name

Mahbod Ebrahimi

Name of organization / entity

Tehran University of Medical Sciences

Country

Iran (Islamic Republic of)

Phone

+98 21 8882 7794

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-04-21, 1400/02/01

Expected recruitment end date

2022-10-22, 1401/07/30

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Comparison of the Effectiveness of Letrozole with Estradiol on Frozen Embryo Transfer Cycle Outcomes in

Women with Polycystic Ovarian Syndrome

Public title

Letrozole effect in IVF cycles

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

The patients with impression of polycystic ovarian syndrome according to Rotterdam consensus as fulfilling at least two of the three criteria: 1- oligo/anovulation; 2- clinical or biochemical signs of hyperandrogenism; and 3- polycystic ovarian morphology on ultrasound Female age: 18 - 40 years old The candidate of frozen embryo transfer

Exclusion criteria:

The other causes of hyperandrogenism and ovarian dysfunction Basal FSH level >10 IU/L History of recurrent miscarriage History of congenital or acquired uterine malformations History of male factor infertility

Age

From **18 years** old to **40 years** old

Gender

Female

Phase

3

Groups that have been masked

- Care provider
- Outcome assessor
- Data analyser

Sample size

Target sample size: **510**

Randomization (investigator's opinion)

Randomized

Randomization description

Random allocation, there are 255 small envelopes containing letter A and 255 small envelopes in the same shape containing letter B in a bag; and for each patient one envelope is selected randomly.

Blinding (investigator's opinion)

Single blinded

Blinding description

Whilst the patients, the sonographer and the physician who will be responsible for administration of drugs will know about the interventions; the physician who will be responsible for embryo transferring and the statistician are unaware of the interventions.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Sina Hospital

Street address

Yas Complex Hospital, Forth Alley Corner, North Ostad Nejatollahi Avenue, Karimkhan Street, Tehran, Iran

City

Tehran

Province

Tehran

Postal code

1597856511

Approval date

2020-12-14, 1399/09/24

Ethics committee reference number

IR.TUMS.SINAHOSPITAL.REC.1399.084

Health conditions studied

1

Description of health condition studied

Polycystic ovarian syndrome

ICD-10 code

E28.2

ICD-10 code description

Polycystic ovarian syndrome

Primary outcomes

1

Description

Live Birth Rate

Timepoint

After pregnancy termination

Method of measurement

The number of deliveries that resulted in a live born neonate, expressed per 100 embryo transfers

Secondary outcomes

1

Description

Clinical Pregnancy Rate

Timepoint

4 to 6 weeks after frozen embryo transfer

Method of measurement

A visible gestational sac by transvaginal ultrasound

2

Description

Ongoing Pregnancy Rate

Timepoint

After 20th weeks of pregnancy

Method of measurement

The number of fetuses with heart activity beyond 20 weeks of gestation

3

Description

Cycle cancellation rate

Timepoint

from 15th until 21th days of cycle

Method of measurement

The number of cancelled cycles

4

Description

Endometrial thickness

Timepoint

On the day of HCG injection

Method of measurement

The measuring of endometrial thickness by transvaginal ultrasound

5

Description

Abortion rate

Timepoint

From 5th until 24th gestational weeks

Method of measurement

The detection of lack or loss of fetal heart activity by ultrasound

6

Description

Premature delivery rate

Timepoint

From 25th until 36th gestational weeks

Method of measurement

The delivery of fetus(es)

Intervention groups

1

Description

Intervention group: In this group, two letrozole tablets (2.5 mg, Aburaihan pharmaceutical co) is prescribed orally for 5 days initiating on day 3 of spontaneous menses or progesterone-induced withdrawal bleeding. Ultrasound monitoring are performed from cycle day 10 onwards. if the leading follicle reaches a mean diameter of ≥ 14 mm on cycle day 10, ultrasound is repeated every 2 days. In case of a mean dominant follicle diameter < 14 mm on day 10, a daily dosage of 75 IU hMG is supplemented to stimulate follicle growth. When the dominant follicle reaches a mean diameter of ≥ 17 mm and endometrial thickness reaches ≥ 7 mm, a bolus of urinary hCG 5000 IU will be injected. According to embryo staging (cleavage stage or blastocyst), embryo transferring will be scheduled 4 or 6 days later.

Category

Treatment - Drugs

2

Description

Control group: In this group, three Estradiol Valerate tablets (2 mg, Aburaihan pharmaceutical co) are prescribed orally from day 3 of spontaneous menses or progesterone-induced withdrawal bleeding. Ultrasound monitoring are performed 12 to 14 days later. ultrasound examination is carried out to measure endometrial thickness as well as to ensure there is no dominant follicle. When the endometrial thickness attained ≥ 7 mm, progesterone vaginal suppositories (Fertigest, 400mg, Aburaihan pharmaceutical co) twice daily are initiated. According to embryo staging (cleavage stage or blastocyst), embryo transferring will be scheduled 4 or 6 days later.

Category

Treatment - Drugs

Recruitment centers

1

Recruitment center**Name of recruitment center**

Yas Hospital

Full name of responsible person

Mahbod Ebrahimi

Street address

Yas Hospital, Ostad Nejatolahi Ave., Karimkhan Blvd.

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Sponsors / Funding sources

1

Sponsor**Name of organization / entity**

Tehran University of Medical Sciences

Full name of responsible person

Mahbod Ebrahimi

Street address

Keshavarz Blvd , Khods St , Tehran University of Medical Sciences

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Grant name

Grant code / Reference number

Is the source of funding the same sponsor organization/entity?

Yes

Title of funding source

Tehran University of Medical Sciences

Proportion provided by this source

100

Public or private sector

Public

Domestic or foreign origin

Domestic

Category of foreign source of funding

empty

Country of origin

Type of organization providing the funding

Academic

Person responsible for general inquiries

Contact

Name of organization / entity

Tehran University of Medical Sciences

Full name of responsible person

Mahbod Ebrahimi

Position

Associate professor

Latest degree

Subspecialist

Other areas of specialty/work

Gynecology and Obstetrics

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Person responsible for scientific inquiries

Contact

Name of organization / entity

Tehran University of Medical Sciences

Full name of responsible person

Mahbod Ebrahimi

Position

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Latest degree

Subspecialist

Other areas of specialty/work

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Person responsible for updating data

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Position

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Other areas of specialty/work

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maebrahimi@tums.ac.ir

Sharing plan

Deidentified Individual Participant Data Set (IPD)

Yes - There is a plan to make this available

Study Protocol

Yes - There is a plan to make this available

Statistical Analysis Plan

Yes - There is a plan to make this available

Informed Consent Form

Yes - There is a plan to make this available

Clinical Study Report

Yes - There is a plan to make this available

Analytic Code

Yes - There is a plan to make this available

Data Dictionary

Yes - There is a plan to make this available

Title and more details about the data/document

Project report to Deputy of Research of TUMS, every researcher who needs data for research

When the data will become available and for how long

5 years

To whom data/document is available

Deputy of Research of TUMS, every researcher who

needs data for research.

Under which criteria data/document could be used

After final report and publishing the results

From where data/document is obtainable

Miss Moamaei-Deputy of Research of TUMS,fifth floor,Central building of TUMS,Ghods ave.,
Tel:00982164431

What processes are involved for a request to access data/document

Miss Moamaei-Deputy of Research of TUMS or send the request to maeb214@yahoo.com, responsible author, after one month they will be responded

Comments