

Trial evaluating the influence of morphology and developmental rate on euploid blastocysts ongoing implantation rate

Submission date 10/12/2013	Recruitment status No longer recruiting	☐ Prospectively registered
		☐ Protocol
Registration date 20/01/2014	Overall study status Completed	☐ Statistical analysis plan
		☐ Results
Last Edited 20/10/2017	Condition category Urological and Genital Diseases	☐ Individual participant data
		☐ Record updated in last year

Plain English summary of protocol

Background and study aims

Preimplantation Genetic Screening (PGS) is a technique that is used to identify euploid embryos (embryos with a balanced set of chromosomes) among those produced by a couple during IVF. PGS is mainly carried out at day 5 or 6 after fertilization. Performing PGS at this stage requires the embryos to be frozen in order to perform a single embryo transfer. Those embryos found to be euploid are thawed and transferred to the uterus. Euploid embryos have a higher rate of implantation in the uterus. However, clear evidence is still missing about the usefulness of factors such as morphology (shape) and developmental rate in predicting implantation potential. The aim of this study is to find out whether these factors could be used to predict the implantation potential of euploid embryos after frozen single embryo transfer.

Who can participate?

Patients who are undergoing PGS at the G.EN.E.R.A. Centre for Reproductive Medicine (Italy)

What does the study involve?

The embryos are grouped into four classes according to morphology (excellent, good, average and poor) and into two classes according to developmental rate (slower-growing and faster-growing). The embryo to be transferred is randomly selected independently from morphological and developmental factors, and the implantation rates in the different classes are compared.

What are the possible benefits and risks of participating?

The study will provide evidence of the influence of morphology and developmental rate on the developmental potential of embryos.

Where is the study run from?

G.EN.E.R.A. Centre for Reproductive Medicine (Italy)

When is the study starting and how long is it expected to run for?

December 2013 to December 2014

Who is funding the study?
G.EN.E.R.A. Centre for Reproductive Medicine (Italy)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
GENERA0042013

Study information

Scientific Title
Influence of morphological grade and developmental rate on euploid blastocysts implantation potential: a non-selection prospective randomized controlled trial

Study objectives
A non-selection prospective randomised controlled trial to define the real influence of morphology and developmental rate of euploid blastocysts on ongoing implantation rate. Outcomes of morphologically different blastocysts transferred in intracytoplasmic sperm injection (ICSI) cycles of women undergoing preimplantation genetic screening (PGS) will be compared. Morphology will be evaluated accordingly to Gardner and Schoolcraft (1994) and blastocysts will be grouped into four classes (poor, average, good and excellent morphology). Also, developmental rate will be considered and blastocysts will be grouped into two classes (faster growing if reaching a stage compatible with biopsy on day 5 of embryo development, slower growing if reaching the same stage on day 6 or 7). According to the study hypothesis, conventional parameters of blastocyst evaluation do not relate with implantation during euploid frozen blastocyst transfer cycles.

Ethics approval required
Old ethics approval format

Ethics approval(s)

Local Medical Ethics Committee (Clinica Valle Giulia Ethics Committee), 01/12/2013, GENERA0042013_ethical approval

Primary study design

Interventional

Study design

Non-selection randomized controlled trial

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Infertility in females undergoing PGS cycles

Interventions

The study would be structured as follows:

1. Ovarian stimulation by agonist or antagonist protocol
2. Ovum pick up performed 36 hours after human chorionic gonadotropin (HCG) administration
3. In vitro fertilization performed by intracytoplasmic sperm injection (ICSI)
4. In vitro culture performed with sequential media in 6% CO₂ and 5% O₂ atmosphere
5. Trophoctoderm biopsy will be performed when the embryo will reach the expanded blastocyst stage. Blastocysts will be cryopreserved thereafter by vitrification, in order to perform the transfer in a thawing cycle
6. Blastocysts will be graded according to Gardner and Schoolcraft (1994)
7. Diagnosis will be performed through quantitative polymerase chain reaction (qPCR) by a referral center
8. In case more than one euploid blastocyst is found in the same cohort from a patient, the embryo to be thawed and transferred will be randomized on the day of transfer by an independent operator. If a patient produces a single euploid blastocyst, it will be directly transferred and included in the study.
9. Luteal support by Progesterone 200 mg vaginally three times a day from oocyte retrieval plus one day

Intervention Type

Other

Phase

Not Applicable

Primary outcome(s)

Ongoing implantation rate. It will be expressed as the number of blastocyst implanted (after 12 weeks) from the day of embryo transfer divided by the total number of blastocysts transferred. It will be updated up to 12 weeks from the last blastocyst transfer performed before the 01/12/2014.

Key secondary outcome(s)

1. Survival rate. It will be expressed as the number of surviving blastocysts after thawing divided by the total number of blastocysts thawed up to 01/12/2014.
2. Re-expansion rate within 3 hours post warming. It will be expressed as the number of

blastocysts re-expanding within no more than 3 hours after thawing divided by the total number of blastocysts surviving to the warming procedure up to 01/12/2014.

3. Biochemical rate. It will be expressed as the number of transfers resulting in a β -hCG positive test without a proper clinical pregnancy divided by the total number of transfers resulting in a β -hCG positive test. It will be updated up to 2 weeks from the last blastocyst transfer performed before 01/12/2014.

4. Abortion rate. It will be expressed as the number of miscarriages divided by the total number of clinical pregnancies. It will be updated up to 12 weeks from the last blastocyst transfer performed before 01/12/2014.

Completion date

01/12/2014

Eligibility**Key inclusion criteria**

1. All consecutive patients enrolled for blastocyst stage PGS cycles
2. Signed consent form

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Adult

Sex

Female

Key exclusion criteria

1. Positive serology for hepatitis B or C or HIV
2. Persisting ovarian cysts > 30 mm diameter
3. Patient is a carrier of monogenic diseases or chromosomal abnormalities
4. Known American Society for Reproductive Medicine (ASRM) Grade III or IV endometriosis
5. Maternal disease that is not clinically stable and known to impact the ability to become pregnant or carry a pregnancy to term
 - 5.1. Lupus
 - 5.2. Chronic liver or kidney disease
 - 5.3. Body mass index (BMI) greater than 30
 - 5.4. Uncontrolled hypertension
 - 5.5. Anti-phospholipid antibody
 - 5.6. Thrombophilia
 - 5.7. Insulin-dependent diabetes

Date of first enrolment

01/12/2013

Date of final enrolment

01/12/2014

Locations

Countries of recruitment

Italy

Study participating centre

Genera Centre for Reproductive Medicine

Rome

Italy

00197

Sponsor information

Organisation

Genera Centre for Reproductive Medicine (Italy)

ROR

<https://ror.org/05aq4y378>

Funder(s)

Funder type

Hospital/treatment centre

Funder Name

G.EN.E.R.A. Centre for Reproductive Medicine (Italy)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not provided at time of registration