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Prospective randomised sibling-oocyte study using recombinant human hyaluronidase Cumulase® versus Sigma hyaluronidase in intracytoplasmic sperm injection patients

Submission date
27/06/2007

Recruitment status
No longer recruiting

Registration date
27/06/2007

Overall study status
Completed

Last Edited
25/10/2021

Condition category
Pregnancy and Childbirth

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[X] Results
[ ] Individual participant data

Plain English summary of protocol
Not provided at time of registration

Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
Protocol number: HZ2-05-07, NL953 (NTR979)

Study information

Scientific Title
Prospective randomised sibling-oocyte study using recombinant human hyaluronidase Cumulase® versus Sigma hyaluronidase in intracytoplasmic sperm injection patients

Study objectives
Non-inferiority trial in order to evaluate the effectiveness of the new compound (recombinant human hyaluronidase or Cumulase®), effectiveness being defined by intactness after Intracytoplasmic Sperm Injection (ICSI) and fertilisation rate.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approval received from the local medical ethics committee (Academisch Ziekenhuis - Vrije Universiteit Brussel) on the 2nd March 2006 (ref: Protocol HZ2-05-07, version 1.0 dd. 27/12 /2005).

Primary study design
Interventional

Study design
Randomised, active controlled, parallel group trial

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Intracytoplasmic Sperm Injection (ICSI), Hyaluronidase

Interventions
Oocyte collection and denudation:
At the moment of oocyte retrieval (day 0), sibling Cumulus Oocyte Complexes(COC's) were allocated to two separate oocyte collection dishes in an alternating way. A computer generated random list (balanced blocks of six) was used for allocation of the first dish to either Cumulase® or bovine hyaluronidase denudation.

Collection and denudation of the oocytes was done in Hepes buffered Human Tubal Fluid (HTF) medium (Cambrex Bioscience, Verviers, Belgium) supplemented with Synthetic Serum Supplement (SSS) (Irvine Scientific, Wicklow, Ireland). Cumulase® denudation (Halozyme Therapeutics Inc., San Diego, USA) involved incubation in 80 U/ml, including Pasteur pipetting of all sibling COCs together (time of incubation to be determined during the study). When most of the cumulus was removed, oocytes were rinced twice in HTF medium prior to further mechanical decoronisation in the absence of the enzyme. The level of additional mechanical stripping was quantified by counting the number of times that individual oocytes had to be pipetted in and out of a small hand-made pipette (inner diameter 135 µm) using a Swemed pipette holder (Vitrolife, Kungsbacka, Sweden). Denudation in bovine hyaluronidase (Type VIII, Sigma Chemical Company,

St Louis, USA) was done similarly except for using a 40 U/ml concentration of the enzyme, because of long-term laboratory experience with this concentration. Incubation time and level of mechanical stripping were evaluated similarly.

Incubation time of the cumulus oocyte complexes was 62 and 63 seconds for Cumulase® and bovine hyaluronidase respectively. Duration of follow up was until positive human Chorionic Gonadotropin (hCG) (i.e. 14 to 17 days post oocyte retrieval).

Baseline outcome measures:
Enzyme incubation time, mechanical denudation and number of mature oocytes available for ICSI are measured at the moment of oocyte denudation, which takes place immediately or ± 2 hours after oocyte retrieval (day 0). ICSI is performed on mature oocytes immediately after denudation.

Intervention Type
Drug

Phase
Not Specified

Drug/device/biological/vaccine name(s)
Cumulase®, sigma hyaluronidase

Primary outcome(s)
1. Oocyte intactness after ICSI, measured ± 18 - 20 hours after ICSI (day 1 of culture)
2. Fertilisation rate, measured ± 18 - 20 hours after ICSI (day 1 of culture)

Key secondary outcome(s)
1. Embryo development:
1.1. Day 3 embryo development is assessed on day 3 of embryo culture
1.2. Day 5 embryo development is assessed on day 5 of embryo culture
2. Positive human Chorionic Gonadotropin (hCG) after embryo transfer, measured in two blood samples given day 14 and day 17 after oocyte retrieval (day 0)

Completion date
28/02/2007

Eligibility

Key inclusion criteria
Women undergoing ICSI treatment with fresh ejaculate sperm cells, no older than 38 years of age and presenting between 8 and 16 Cumulus Oocyte Complexes (COC's) at ovum pick up.

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group

Adult

Sex
Female

Key exclusion criteria
1. Surgically extracted sperm preparations
2. Embryo biopsy cycles
3. Women older than 38 years
4. Women with less than 8 or more than 16 COC's

Date of first enrolment
01/05/2006

Date of final enrolment
28/02/2007

Locations

Countries of recruitment
Belgium

Netherlands

Study participating centre
Laboratory Director
Brussels
Belgium
B-1090

Sponsor information

Organisation
University Hospital Brussels (Universitair Ziekenhuis Brussel [UZ Brussel]) (Belgium)

ROR
https://ror.org/038f7y939

Funder(s)

Funder type
Industry

Funder Name
Halozyme Therapeutics Inc. (USA)

Funder Name
University Hospital Brussels (Universitair Ziekenhuis Brussel [UZ Brussel]) (Belgium)

Results and Publications

Individual participant data (IPD) sharing plan
Not provided at time of registration

IPD sharing plan summary
Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Abstract results		01/06/2007	25/10/2021	No	No