Clinical Trial Protocol
Iranian Registry of Clinical Trials

07 Nov 2026

Evaluation of safety and efficacy of intra-articular knee transplantation of three consecutive doses of allogenic umbilical cord mesenchymal stromal cells in patients with knee osteoarthritis: interventional clinical trial, phase I/II

Protocol summary

Study aim
Safety & efficacy evaluation of intra-articular transplantation of 3 consecutive doses of allogenic umbilical cord tissue-derived stromal mesenchymal cells in patients with knee osteoarthritis

Design
Randomised controlled trial, with parallel groups, double-blind, phase 1/2 on 30 patients, randomized using Random allocation software

Settings and conduct
Patients are transplanted 3 times at intervals of 0, 2 and 4 months in the operating room of Royan Clinic. Patients will be monitored for up to one year. For the purpose of blinding, the biological product will be prepared in the form of disposable 5 cc syringes that look exactly like each other with a special label. Only the doctor and the person in charge of the transplant will know the type of treatment received.

Participants/Inclusion and exclusion criteria
- Inclusion criteria: Age 40-70 years Knee osteoarthritis with grades 2 and 3 Diagnosis by radiograph of standing knee VAS Knee pain: ≥4 Complete the informed consent form - Exclusion criteria: Knee deviation more than 15 degrees BMI ≥ 35 Pregnant women, nursing mothers or adults with disabilities Intra-cartilage injection during the last 2 months Arthroscopy in the last 6 months Abnormal hematological or biochemical tests Any type of neoplasm Take aspirin 1 week before the cell injection Coagulopathy or use of anticoagulants Positive viral tests Rheumatoid arthritis or other autoimmune diseases involving the joints Allergy to substances in the culture medium Corticosteroid use in 3 months

Intervention groups
Control group: 3 doses of normal saline + hyaluronic acid Test Group: 3 doses of normal saline containing mesenchymal cells derived from non-native umbilical cord tissue + hyaluronic acid

Main outcome variables
Adverse events (AEs) and severe adverse events (SAEs) WOMAC VAS SF-36 Articular cartilage thickness

General information

Reason for update
Add information about the new sponsor (Cell-Tech Pharmed) of this clinical trial

Acronym

IRCT registration information
IRCT registration number: **IRCT20211102052944N1**
Registration date: **2021-11-09, 1400/08/18**
Registration timing: **prospective**

Last update: **2021-11-27, 1400/09/06**
Update count: **1**

Registration date
2021-11-09, 1400/08/18

Registrant information

Name
Elaheh Afzal

Name of organization / entity
Royan stem cell technology company

Country
Iran (Islamic Republic of)

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+98 21 2763 5735

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e.afzal@rsct.ir

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2021-11-22, 1400/09/01
Expected recruitment end date
2022-05-22, 1401/03/01
Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Evaluation of safety and efficacy of intra-articular knee transplantation of three consecutive doses of allogenic umbilical cord mesenchymal stromal cells in patients with knee osteoarthritis: interventional clinical trial, phase I/II

Public title
Intra-articular transplantation of umbilical cord stromal mesenchymal cells in patients with knee osteoarthritis
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion criteria:
40-70 years Unilateral knee osteoarthritis Kellgren and Lawrence grade of both knees between 2 and 3 Evidence of x-ray imaging findings compatible with knee osteoarthritis knee pain for at least 4 months that has not responded to common medical and physical therapies. Visual analogue score ≥ 4 Informed consent
Exclusion criteria:
Pregnancy or lactation Inflammatory or infectious arthritis Intra-articular injection during the last 2 months Body Mass Index ≥ 35 Haematological and biochemical analysis with significant alterations that contraindicates intervention Known and uncontrolled chronic disease (including diabetes (HbA1c ≥ 8), heart failure (EF <45%), renal failure (Cr> 2), liver failure (AST, ALT> 100) History of any type of neoplasm Take aspirin one week before the cell injection History of coagulopathy or use of anticoagulants Positive viral tests (HIV, CMV, HTLV1 & 2, HBV, HCV) Having a movement disorder Having serious illnesses with a life expectancy of less than 1 year Drug or alcohol abuse History or clinical diagnosis of any psychological disorder Arthroscopy in the last 6 months Rheumatoid arthritis or other autoimmune diseases that affect the joints. Immunosuppression or taking systemic immunosuppressant Allergy to proteins or substances in culture medium (gentamicin, bovine or equine serum) History of corticosteroid use 3 months before enrolment Knee joint misalignment ≥15 degree
Age
From **40 years** old to **70 years** old
Gender
Both

Phase
1-2
Groups that have been masked

- Participant
- Investigator
- Outcome assessor
- Data analyser

Sample size
Target sample size: **30**
Randomization (investigator's opinion)
Randomized
Randomization description
Patients will be randomly assigned to the control and MSC groups. The method of random assignment of these two groups is block randomization. The size of the blocks is 6 people and using Random allocation software, the sequence of assigning patients to the groups is determined, and this sequence will be kept by the transplant manager.
Blinding (investigator's opinion)
Double blinded
Blinding description
This study is a double-blind study. Patients and study analysts will be unaware of the type of treatment assigned. To achieve this goal, by using a biological product in the form of disposable 5 cc syringes that are already filled by the nurse and are completely "similar" to the type of treatment received, to blind the participants in the study. Also, the people who apply the treatment will be different from the people who are responsible for examining and evaluating the patients, and the biological product packages will be labeled according to a specific code. Only the doctor and the person in charge of the transplant will know the type of treatment the patients receive.
Placebo
Not used
Assignment
Parallel
Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
Research Ethics Committees of Royan Institute-Academic Center for Education, Culture and Research
Street address
No. 24, East Hafez Alley, Bani Hashim Square, Bani Hashim St, Resalat Highway, Tehran, Iran.
City
Tehran
Province
Tehran
Postal code
1665666311
Approval date
2021-09-21, 1400/06/30
Ethics committee reference number
IR.ACECR.ROYAN.REC.1400.079

Health conditions studied

1

Description of health condition studied
Knee Osteoarthritis
ICD-10 code
M17
ICD-10 code description
Osteoarthritis of knee

Primary outcomes

1

Description
Adverse events and severe adverse events
Timepoint
2, 4, 6, 9, and 12 months after intervention
Method of measurement
Clinical signs and questionnaire

Secondary outcomes

1

Description
Visual analog scale
Timepoint
Baseline and 2, 4, 6, 9, and 12 months after intervention
Method of measurement
Visual Analogue Scale Questionnaire

2

Description
Western Ontario and McMaster Universities Osteoarthritis Index
Timepoint
Baseline and 2, 4, 6, 9, and 12 months after intervention
Method of measurement
WOMAC Questionnaire

3

Description
Disability index
Timepoint
Baseline and 6, 9, and 12 months after intervention
Method of measurement
Short Form Health-36 Questionnaire

4

Description
Articular cartilage thickness
Timepoint
Baseline and 6, 9, and 12 months after intervention
Method of measurement
Magnetic resonance imaging

Intervention groups

1

Description
Control group: Patients receiving 3 doses of normal saline + Hyaluronic acid The procedure will be performed in such a way that patients are injected intra-articular injection of 2 cc of normal saline with 2 cc of hyaluronic acid in three times at 0, 2 and 4 months intervals in the operating room of Royan Clinic. At the time of injection, the patient's knee is sterilized and the orthopedic surgeon will inject into the joint space under sterile conditions. After the injection, the patient is monitored for 2 hours and after this period, if there is no problem with the necessary medication and care instructions and explanation of warning signs will be discharged.
Category
Treatment - Drugs

2

Description
Intervention group: Patients receiving 3 doses of normal saline containing 20 million Mesenchymal cells derived from allogenic umbilical cord tissue + Hyaluronic acid The method of intervention will be that patients in three times at intervals of 0, 2 and 4 months in the operating room of Royan Clinic, injected with 2 cc of normal saline containing 20 million mesenchymal stem cells derived from non-native umbilical cord tissue with 2 cc of hyaluronic Acids are placed. On the day of cell transplantation, it is sent to this center for injection by the clean room of Cell Tech Pharmed factory in a vial and inside a box. The patient's knee is sterilized and the orthopedic surgeon will inject into the joint space under sterile conditions. After the injection, the patient is monitored for 2 hours and after this period, if there is no problem with the necessary medication and care instructions and explanation of warning signs will be discharged.
Category
Treatment - Other

Recruitment centers

1

Recruitment center
Name of recruitment center
Royan Cell Therapy Center
Full name of responsible person
Masoud Vosough
Street address
No.9, Shaghayegh Dead End, Bani Hashem Sq., Bani Hashem St., Resalat St.,
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تهران
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Postal code
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Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Royan Stem Cell Technology Company
Full name of responsible person
Morteza Zarrabi
Street address
No. 24, East Hafez Alley, Bani Hashim Square, Bani Hashim St, Resalat Highway, Tehran, Iran.
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Email
Info@rsct.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Royan Stem Cell Technology Company
Proportion provided by this source
80
Public or private sector
Private
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Other

2

Sponsor
Name of organization / entity
Cell-Tech Pharmed
Full name of responsible person
Mohammad Hossein Zirak Saz
Street address
Cell-Tech Pharmed Company, Drug Production Factory, Kermani St., Moallem Blvd., Yaftabad,
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Province
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Postal code
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Phone
+98 21 6735 7000
Email
info@celltech.co
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Cell-Tech Pharmed
Proportion provided by this source
20
Public or private sector
Private
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Other

Person responsible for general inquiries

Contact
Name of organization / entity
Royan Institute
Full name of responsible person
Morteza Zarrabi
Position
Assistant Professor
Latest degree
Specialist
Other areas of specialty/work
Cell & molecular biology
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No. 24, East Hafez Alley, Bani Hashim Square, Bani Hashim St, Resalat Highway, Tehran, Iran.
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Person responsible for scientific inquiries

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Mohsen Emadedin
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Person responsible for updating data

Contact
Name of organization / entity
Royan Stem Cell Technology Company
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Elaheh Afzal
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Researcher
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Master
Other areas of specialty/work
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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Yes - There is a plan to make this available
Study Protocol
Undecided - It is not yet known if there will be a plan to make this available
Statistical Analysis Plan
Undecided - It is not yet known if there will be a plan to make this available
Informed Consent Form
Undecided - It is not yet known if there will be a plan to make this available
Clinical Study Report
Undecided - It is not yet known if there will be a plan to make this available
Analytic Code
Undecided - It is not yet known if there will be a plan to make this available
Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available
Title and more details about the data/document
The information and data will be published as an article after reviewing and verifying them. All data is potentially shareable after unidentified individuals.
When the data will become available and for how long
After following the patients and collecting data, checking the safety and efficiency of cell injection and then writing the article, which is done about 3 months after the follow-up, the data file will be published.
To whom data/document is available
Access to the documents of this research is not limited to academic and scientific researchers, and specialists working in other centers can also access these documents.
Under which criteria data/document could be used
Designing similar studies in other academic centers
From where data/document is obtainable
e.afzal@rsct.it
What processes are involved for a request to access data/document
Within 1-2 months after application. Applicants for access to the research documents must provide evidence of their activity in the relevant field and their need for this data along with their application email.
Comments