

Clinical Trial Protocol

Iranian Registry of Clinical Trials

27 Jun 2026

Human Placenta-Derived Mesenchymal Stem Cell Transplantation in Acute Respiratory Distress Syndrome (ARDS) Caused by COVID-19: Phase I Clinical Trial

Protocol summary

Study aim

The safety evaluation of placenta-derived mesenchymal stem cell transplantation after in vitro culture in patients with COVID-19 related acute respiratory distress syndrome

Design

The study is a single arm, non randomized, non-blinded Phase 1 clinical trial in 10 patients with COVID-19-induced early ARDS

Settings and conduct

PLMSCs are manufactured according to GMP rules in a cleanroom facility. After passing QC tests, 1 million/kg of PLMSCs are packed in a bag and injected intravenously (during 15 minutes). The injections are done in university hospitals which located in Tehran.

Participants/Inclusion and exclusion criteria

Inclusion Criteria: The confirmed positive result of RT-PCR test for SARS-COV2 acute infection Bilateral opacity of the lungs on CT scan PaO₂ / FiO₂ ratio <200 Exclusion Criteria: Presence of severe and irreversible disease with a life expectancy of fewer than 6 months Moderate to severe liver failure (Childs-Pugh score>12) History of chronic lung disease with PaCO₂> 50 mmHg or history of oxygen consumption at home

Intervention groups

Patients with COVID-19-induced early ARDS will receive a single dose of approximately 1 million/kg human-derived placental mesenchymal stem cells intravenously in addition to routine treatments.

Main outcome variables

1. Acute complications of cell transplantation in the first 24 hours after transplantation and up to 28 days after treatment
- 2- Change in the severity of pneumonia during hospitalization up to 28 days after treatment
- 3- Changing the oxygen supply (PaO₂ / FiO₂) up to 28 days after treatment
- 4- Number of days of connection to the mechanical ventilation device and number of days of

hospitalization in the ICU

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20200621047859N4**

Registration date: **2021-01-03, 1399/10/14**

Registration timing: **registered_while_recruiting**

Last update: **2021-01-03, 1399/10/14**

Update count: **0**

Registration date

2021-01-03, 1399/10/14

Registrant information

Name

Ramin Sarrami Forooshani

Name of organization / entity

Country

Iran (Islamic Republic of)

Phone

+98 21 8879 6003

Email address

rsf1351@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2020-10-28, 1399/08/07

Expected recruitment end date

2021-03-10, 1399/12/20

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Human Placenta-Derived Mesenchymal Stem Cell Transplantation in Acute Respiratory Distress Syndrome (ARDS) Caused by COVID-19: Phase I Clinical Trial)

Public title

The effects of mesenchymal stem cells in COVID-19

Purpose

Treatment

Inclusion/Exclusion criteria**Inclusion criteria:**

COVID-19 infection confirmed with positive PCR test results with clinical signs including respiratory distress, cough, fever, decreased blood oxygen saturation, and imaging results in favor of ARDS Over 18 years of age Bilateral opacity of lungs on CT scan PaO₂/FiO₂ ratio < 200 Requires mechanical ventilation to increase oxygen saturation Written informed consent (according to the patient's condition, in case of unconscious consent, the consent will be obtained from the patient's guardian).

Exclusion criteria:

Less than 18 years of age More than 96 hours passed from the diagnosis of ARDS (Based on the Berlin definition of ARDS) Pregnancy or breastfeeding Presence of active malignancy which has been treated in the past two years Presence of severe and irreversible disease with a life expectancy of less than 6 months Moderate to severe liver failure (Childs-Pugh Score > 12) History of chronic lung disease with PaCO₂ > 50 mm Hg or history of oxygen consumption at home Extensive trauma in the past 5 days History of lung transplantation Inability to provide informed consent or meet test conditions Class 3 or 4 pulmonary hypertension (WHO classification) History of pulmonary embolism or deep vein thrombosis (DVT) in the past three months

Age

From **18 years** old

Gender

Both

Phase

1

Groups that have been masked

No information

Sample size

Target sample size: **20**

Randomization (investigator's opinion)

Not randomized

Randomization description**Blinding (investigator's opinion)**

Not blinded

Blinding description**Placebo**

Not used

Assignment

Single

Other design features**Secondary Ids**

empty

Ethics committees**1****Ethics committee****Name of ethics committee**

Research Ethics Committee of Motamed Cancer Institute Academic Center for Education Culture and Rese

Street address

No 146, South Ghandi, Vanaq Square, Tehran, Iran

City

Tehran

Province

Tehran

Postal code

1517964311

Approval date

2020-05-06, 1399/02/17

Ethics committee reference number

IR.ACECR.IBCRC.REC.1399.009

Health conditions studied**1****Description of health condition studied**

Acute Respiratory Distress Syndrome

ICD-10 code

J80

ICD-10 code description

Acute respiratory distress syndrome

Primary outcomes**1****Description**

Safety of PLMSCs intravenous injection

Timepoint

During hospitalization up to 28 days after treatment

Method of measurement

Physical examinations and blood tests

2**Description**

Change the amount of oxygen supply

Timepoint

Up to 28 days after treatment

Method of measurement

Measurement of PaO₂ / FiO₂

3**Description**

mortality

Timepoint

Up to 28 days after intervention

Method of measurement

The patients follow up

4

Description

Change in the severity of pneumonia

Timepoint

During hospitalization up to 28 days after treatment

Method of measurement

Physical examination - percentage of oxygen in the ventilator

Secondary outcomes

1

Description

Investigation of visceral insufficiency

Timepoint

Up to 28 days after transplantation

Method of measurement

Perform liver and kidney function tests on days 0, 7, 14 and 28

2

Description

C-reactive protein changes

Timepoint

Daily to +28

Method of measurement

Measurement of blood C-reactive protein

3

Description

Change in the number of lymphocytes

Timepoint

Day zero to week 12

Method of measurement

blood test

4

Description

Lung CT scan changes

Timepoint

Within 28 days after treatment

Method of measurement

Perform a CT scan of the lungs

5

Description

Duration of ICU admission

Timepoint

at the time of ICU discharge

Method of measurement

Number of admission days

Intervention groups

1

Description

Intervention group: Patients with resistant pneumonia caused by COVID-19 infection with acute symptoms of ARDS who have not responded to routine treatments. This group will receive about 10⁶ cells/Kg Good manufacturing practices (GMP)-grade mesenchymal stem cells infusion over 10 minutes. The common treatments of patients will not be stopped.

Category

Treatment - Other

Recruitment centers

1

Recruitment center

Name of recruitment center

Imam Khomeini Hospital

Full name of responsible person

Dr Samrand Fattah Ghazi

Street address

Imam Khomeini Hospital Complex, Dr Gharib Ave, Keshavarz Blvd, Tehran, Iran

City

Tehran

Province

Tehran

Postal code

1419733141

Phone

+98 21 1186 1190

Email

samrand1@gmail.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Modiriat Atiye Bahman Company

Full name of responsible person

Sina Hasnalizadeh

Street address

No.1, Tabatabaei ALY, Shahid Ghasemi Ave, Tehran, Iran

City

Tehran

Province

Tehran

Postal code

1459973114

Phone

+98 21 8879 6003

Email

rsf1351@gmail.com

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Modiriat Atiye Bahman Company

Proportion provided by this source

90

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

Academic

2

Sponsor

Name of organization / entity

Motamed Cancer Institute

Full name of responsible person

Dr Keivan Majidzadeh Ardebili

Street address

No.146, South Ghandi, Vanaq Square, Tehran, Iran

City

Tehran

Province

Tehran

Postal code

1517964311

Phone

+98 21 8879 6003

Email

K1majidzadeh@gmail.com

Grant name

Grant code / Reference number

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

No

Title of funding source

Cell therapy budget of the Islamic Consultative Assembly

Proportion provided by this source

10

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

Other

Person responsible for general inquiries

Contact

Name of organization / entity

Iranian academic center for education culture and research

Full name of responsible person

Dr Ramin Sarrami Forooshani

Position

Associated Professor

Latest degree

Ph.D.

Other areas of specialty/work

Virology

Street address

No.146, Vanaq Square, South Ghandi, Tehran, Iran

City

Tehran

Province

Tehran

Postal code

1517964311

Phone

+98 21 8879 6003

Email

rsf1351@gmail.com

Person responsible for scientific inquiries

Contact

Name of organization / entity

Iranian academic center for education culture and research

Full name of responsible person

Dr Ramin Sarrami Forooshani

Position

Associated professor

Latest degree

Ph.D.

Other areas of specialty/work

Virology

Street address

No.146, Vanaq Aquare, South Ghandi, Tehran, Iran

City

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Province

Tehran

Postal code

1517964311

Phone

+98 21 8879 6003

Email

rsf1351@gmail.com

Person responsible for updating data

Contact

Name of organization / entity

Iranian academic center for education culture and research

Full name of responsible person

Fatemeh Salimian

Position

Researcher

Latest degree

Master

Other areas of specialty/work

Others

Street address

No.146, South Ghandi, Vanaq Square, Tehran, Iran

City

Tehran

Province

Tehran

Postal code

1517964311

Phone

+98 21 8879 6003

Email

sepideh.salimian.s2@gmail.com

Sharing plan**Deidentified Individual Participant Data Set (IPD)**

Undecided - It is not yet known if there will be 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

Not applicable

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

Not applicable

Data Dictionary

Not applicable