

Clinical Trial Protocol

Iranian Registry of Clinical Trials

30 Jul 2026

Evaluation of safety and efficacy of Intravenous and Intrathecal injection of autologous bone marrow-derived mesenchymal stem cells in RRMS patients under fingolimod therapy: randomized clinical trial with control group, Phase 2 and 3.

Protocol summary

Study aim

Evaluation of injection of mesenchymal stem cells into RRMS patients who are under Fingolimod therapy.

Design

This is a Phase 2-3 study that examines the safety and efficacy of intravenous and intrathecal injections of autologous bone marrow mesenchymal stem cells with fingolimod compared to fingolimod alone in MS patients. The study employed a two-arm, single-blind randomized controlled design and Superiority.

Settings and conduct

120 patients with RRMS were divided into two groups of 60 each. First group patients received only fingolimod and second group patients receive fingolimod plus 2 Injections of autologous mesenchymal stem cells (1 intravenously and 1 Intrathecally). Two groups of neurologists work in this study: the first group selects patients and initiates treatment that is not blind to the study. The second group conducts clinical follow-up of patients that is blind to the study. Bone marrow aspirations, stem cell and drug administrations are performed in hospitals. Cell cultures are performed in GMP grade clean rooms along with quality control tests. Follow-up, examination and paraclinical tests are performed at physicians office or hospitals.

Participants/Inclusion and exclusion criteria

Inclusion criteria 1. Age: 18 to 55 2. Clinical diagnosis of RRMS. 3. EDSS less than 6 Exclusion criteria 1. A history of another underlying disease Including neoplasm. 2. Positive laboratory tests for hepatitis B, C, HIV, HTLV JCV. 3. The presence of any metallic particles implant in the body, due to the limitations in performing the MRI

Intervention groups

1. Control group: Fingolimod is prescribed only in accordance with the routine protocol. 2. Test group: Fingolimod is prescribed in addition to mesenchymal

stem cells.

Main outcome variables

Safety: Study of side effects in both groups over 12 months. Efficacy: Clinical relapse rate during one year follow-up.

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20191004044975N1**

Registration date: **2020-01-10, 1398/10/20**

Registration timing: **prospective**

Last update: **2020-01-10, 1398/10/20**

Update count: **0**

Registration date

2020-01-10, 1398/10/20

Registrant information

Name

Mandana Mohyeddin Bonan

Name of organization / entity

SinaCell research and production Co.

Country

Iran (Islamic Republic of)

Phone

+98 21 7625 0661

Email address

mandanamohyeddin@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2020-02-04, 1398/11/15
Expected recruitment end date
 2021-10-22, 1400/07/30
Actual recruitment start date
 empty
Actual recruitment end date
 empty
Trial completion date
 empty

Scientific title
 Evaluation of safety and efficacy of Intravenous and Interatechal injection of autologous bone marrow-driven mesenchymal stem cells in RRMS patients under fingolimod therapy: randomized clinical trial with control group, Phase 2 and 3.

Public title
 Investigating the effect of the bone marrow-driven mesenchymal stem cells in MS patients under fingolimod therapy.

Purpose
 Treatment

Inclusion/Exclusion criteria
Inclusion criteria:
 Clinical diagnosis of RRMS. EDSS less than 6 Patients who have used the first line of DMD for one year and who have had a clinical attack or deteriorating brain and Cervical Spinal Cord MRI findings in the one past-year. Disease progression or the onset of re-attack or deteriorating MRI findings within the one past- year prior to inclusion Normal macula. Patients' written consent to participate in the study.
Exclusion criteria:
 Proven clinical attack 30 days prior to the patient's entry into the study. Use of corticosteroid drug (MePDN) 30 days prior to the patient's entry into the study. Having infectious diseases. A history of another underlying disease Including neoplasm. The presence of clear disorders in consciousness and cognition. Creatinine greater than 1.7 mg/dl Or Liver enzymes three times the upper limit of the normal range or more, Or a white blood cell count less than 3,000/mm3 and hemoglobin less than 10.7 g/dL. Treatment with cytotoxic drugs 6 months before starting the study. Positive laboratory tests for hepatitis B, C, HIV , HTLV, JCV, or syphilis. The presence of any contain metallic particles implant in the body, due to the limitations in performing the MRI Positive TB (PPD) test. Pregnancy or pregnancy intention during treatment in female patients.

Age
 From **18 years** old to **55 years** old

Gender
 Both

Phase
 2-3

Groups that have been masked

- Care provider
- Outcome assessor
- Data analyser

Sample size

Target sample size: **120**
Randomization (investigator's opinion)
 Randomized
Randomization description
 The "http://www.randomization.com" site will be used to generate random code.The permuted-block randomization method was used to balance the number of patients and to randomly assign patients to the control and intervention group and the control group.The blocks vary in size in each disease category. (with block size =10 and 4)
Blinding (investigator's opinion)
 Single blinded
Blinding description
 Unlike Fingolimod Therapy, the type of cell therapy intervention requires bone marrow aspiration . Ethically, the patients are not blinded for the intervention and, consequently, the physician who applies the intervention is not blind to the treatment of the patients. But clinical examinations, laboratory results and evaluations (such as MRI imaging, etc.) will be performed by physicians who are unaware of the patient's specific treatment, and to determine the final data, the statistical analyzer does not know the actual treatment and the groups are locked (A and B labeled) and sent for statistical analysis.

Placebo
 Not used
Assignment
 Parallel
Other design features

Secondary Ids
 empty

Ethics committees

1

Ethics committee
Name of ethics committee
 Ethics committee of Tehran University of medical sciences
Street address
 Poursina Ave.
City
 Tehran
Province
 Tehran
Postal code
 3439123900

Approval date
 2019-09-03, 1398/06/12
Ethics committee reference number
 IR.TUMS.VCR.1398.537

2

Ethics committee
Name of ethics committee
 Ethics committee of Shahid Beheshti University of medical sciences
Street address

Velenjak

City

Tehran

Province

Tehran

Postal code

1971653313

Approval date

2019-08-20, 1398/05/29

Ethics committee reference number

IR.SBMU.REC.1398.049

Health conditions studied

1

Description of health condition studied

Multiple sclerosis

ICD-10 code

G35

ICD-10 code description

Multiple sclerosis

Primary outcomes

1

Description

safety

Timepoint

Month of 1,2,3,4,5,6,8,10 and 12

Method of measurement

Evaluation of side effects during one year after intervention .

2

Description

Efficacy

Timepoint

Month of 1,2,3,4,5,6,8,10 and 12

Method of measurement

Number of clinical relapses during one year after intervention .

Secondary outcomes

1

Description

The number of gadolinium enhancing lesions in comparison to baseline in two groups.

Timepoint

In the months of 0,6,12

Method of measurement

MRI

2

Description

Prevention of EDSS progression in comparison of baseline EDSS in two groups.

Timepoint

In the months of 0,1,2,3,4,5,6,8,10 and 12

Method of measurement

The Kurtzke Expanded Disability Status Scale (EDSS) method.

3

Description

Visual evoked potential

Timepoint

In the months of 0,3,6,12

Method of measurement

Electrooculogram

4

Description

Total survival rate of the patient

Timepoint

One year follow up

Method of measurement

Visual

5

Description

Progression Free Survival rate

Timepoint

One year follow up

Method of measurement

The results of clinical and para-clinical evaluation.

6

Description

The number of new T2 lesions in comparison to baseline in two groups.

Timepoint

The month of 0, 6, 12

Method of measurement

MRI

Intervention groups

1

Description

Intervention group: This group received the fingolimod and autologous bone marrow derived mesenchymal stem cells proliferating in the culture medium, at the same time . The cells are suspended in serum physiology medium enriched with human serum albumin, which is administered twice. For the first time intravenously in a dose of 1 to 2 million per kg body weight of the patient and the second time, after about two weeks, Intrathecally applied in a dose of / 0.5. Millions per Kg body weight of the patient.

Category

Treatment - Other

2

Description

Control group: This group will received only a single dose of fingolimod (0.5Milligrams Danelvin capsule , Nano-Alvand Company) daily by the end of the study.

Category

Treatment - Drugs

Recruitment centers

1

Recruitment center

Name of recruitment center

Loghman Hakim Hospital

Full name of responsible person

Hossin Pakdaman

Street address

Lashghar Intersection. Makhsus St.

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Province

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Postal code

1333625445

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Email

loghman.hospital@sbmu.ac.ir

Web page address

<https://www.dr.saina.com>

2

Recruitment center

Name of recruitment center

Gandhi Hospital

Full name of responsible person

saeed shahbeigi

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Ghandhi Street

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Province

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Postal code

1517717111

Phone

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Email

info@gandhihospital.ir

Web page address

<http://gandihospital.ir/>

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Vice-presidency for science and technology

Full name of responsible person

Amir Ali Hmidieh

Street address

North Sheikh Bahayee St. Ladan Alley

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Tehran

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Tehran

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Email

pr@stemcell.isti.ir

Web page address

<http://isti.ir/>

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Vice-presidency for science and technology

Proportion provided by this source

60

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

2

Sponsor

Name of organization / entity

Sinacell research and production company

Full name of responsible person

ehsan seyedjafari

Street address

No. 162, Noaver 16, Pardis Technology Park

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Tehran

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Email

info.sinacell@gmail.com

Web page address
http://sinacellco.com/

Grant name

Grant code / Reference number

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

Title of funding source
Sinacell research and production company

Proportion provided by this source
40

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
Sinacell research and production Company

Full name of responsible person
Mandana Mohyeddin Bonab

Position
Technical Director

Latest degree
Ph.D.

Other areas of specialty/work
Stem cell researcher

Street address
No. 19, First East Ave., 24 meter Blvd., Saadatabad

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Province
Tehran

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Email
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Person responsible for scientific inquiries

Contact

Name of organization / entity
Brain Mapping Research Center

Full name of responsible person
saeed shahbeigi

Position
researcher

Latest degree
Subspecialist

Other areas of specialty/work
Neurology

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Loghman HakimHospital, South Karghar Ave., Kamali St.,,

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bmrc@sbmu.ac.ir

Web page address
http://bmrc.sbm.ac.ir/

Person responsible for updating data

Contact

Name of organization / entity
Ministry of Health and Medical Education

Full name of responsible person
Abbas Najjari

Position
Manager of research and technology data

Latest degree
Ph.D.

Other areas of specialty/work
Health Technology Assessment

Street address
Eyvanak Blvd., Qods Town

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Tehran

Province
Tehran

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+98 21 8145 5131

Email
najjabb@yahoo.com

Web page address
http://behdasht.gov.ir/

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

Yes - There is 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

Yes - There is 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

Yes - There is a plan to make this available

Title and more details about the data/document

Information about the main outcome will be shared.

When the data will become available and for how long

Data will be available six months after the results are published.

To whom data/document is available

The data will be made available to academic researchers and those working in the fields of neurology and MS.

Under which criteria data/document could be used

By contacting the project executives and Contact the

project sponsor

From where data/document is obtainable

1- Mandana mohyeddin Bonab
mohyeddin@sina.tums.ac.ir 2- saeed shahbeigi
s_shahbeigi@yahoo.com 3- sinacell
info.sinacell@gmail.com

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

The request will first be emailed to one of the addresses.
The request will then be processed and the requested data will be sent to the email address of the requestor or the reason for the failure to respond. This process may take about two weeks.

Comments