Clinical Trial Protocol
Iranian Registry of Clinical Trials

06 Nov 2026

Evaluation of safety and efficacy of Intravenous and Interatechal injection of autologous bone marrow-drived 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-drived 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-drived 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.
City
Tehran
Province
Tehran
Postal code
1333625445
Phone
+98 21 5541 9005
Fax
+98 21 5541 9005
Email
loghman.hospital@sbmu.ac.ir
Web page address
https://www.drsaina.com

2

Recruitment center
Name of recruitment center
Gandhi Hospital
Full name of responsible person
saeed shahbeigi
Street address
Ghandhi Street
City
Tehran
Province
Tehran
Postal code
1517717111
Phone
+98 21 4260 3000
Fax
+98 21 4260 3000
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
City
Tehran
Province
Tehran
Postal code
1991745681
Phone
+98 21 8353 2471
Fax
+98 21 8353 2375
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
City
Tehran
Province
Tehran
Postal code
1657163871
Phone
+98 21 7625 0661
Fax
+98 21 7625 0664
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
City
Tehran
Province
Tehran
Postal code
1997778714
Phone
+98 21 2206 6928
Email
mohyeddin@sina.tums.ac.ir

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
Street address
Loghman HakimHospital, South Karghar Ave., Kamali St.,,
City
Tehran
Province
Tehran
Postal code
1333631151
Phone
+98 21 5541 0044
Fax
+98 21 5541 0044
Email
bmrc@sbmu.ac.ir
Web page address
http://bmrc.sbmu.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
City
Tehran
Province
Tehran
Postal code
1467664961
Phone
+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@gmial.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