Clinical Trial Protocol
Iranian Registry of Clinical Trials

06 Nov 2026

Evaluation of the effect of Levetiracetam on cognitive impairment in patients with relapsing- remitting multiple sclerosis (RRMS) based on minimal assessment of cognitive function in multiple sclerosis (MACFIMS)

Protocol summary

Study aim

Evaluation of the effect of Levetiracetam on cognitive impairment in patients with relapsing-remitting multiple sclerosis based on minimal assessment of cognitive function in multiple sclerosis

Design

Clinical trial with control group,with parallel groups,double-blind,randomized, phase 3 on 88 patients.For randomization by random block method

Settings and conduct

A double-blind clinical trial will be conducted at Sina Hospital MS Research Center.88 patients with relapsing-remitting MS were randomly divided into case and control groups and treated with levetiracetam or placebo for 16 weeks.The starting dose is 250 mg twice daily and the dose is Reaches 1000 mg twice a day.

Participants/Inclusion and exclusion criteria

Inclusion criteria: Patients with relapsing- remitting MS 18-60 years؛Minimum education for cognitive tests؛At least 2 years have passed since the disease - Receiving oral and injectable disease-modifying drugs(DMD)؛Expanded Disability Status Scale less 5.5 Exclusion criteria: The type and dose of (DMD) have changed in the last six months؛Corticosteroids received in the last thirty days؛Attack in the last sixty days.

Intervention groups

Intervention group: 44 patients with relapsing-remitting MS(RRMS) are treated with levetiracetam for 16 weeks.The starting dose is 250 mg twice daily and 500 mg is added to the daily dose every week and the drug dose is 1000 mg twice daily.Control group: 44 (RRMS) patients are treated with placebo for 16 weeks.

Main outcome variables

Main Outcome:minimal assessment of cognitive function in multiple sclerosis (MACFIMS) ,

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20210707051810N2**
Registration date: **2021-10-05, 1400/07/13**
Registration timing: **registered_while_recruiting**

Last update: **2021-10-05, 1400/07/13**
Update count: **0**

Registration date

2021-10-05, 1400/07/13

Registrant information

Name
Maryam Sharif
Name of organization / entity
Country
Iran (Islamic Republic of)
Phone
+98 21 8601 7570
Email address
maryamsharif.424@gmail.com

Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2021-09-23, 1400/07/01

Expected recruitment end date

2022-09-22, 1401/06/31

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title
Evaluation of the effect of Levetiracetam on cognitive impairment in patients with relapsing- remitting multiple sclerosis (RRMS) based on minimal assessment of cognitive function in multiple sclerosis (MACFIMS)

Public title
Evaluation of the effect of Levetiracetam on cognitive impairment in patients with MS

Purpose
Treatment

Inclusion/Exclusion criteria

Inclusion criteria:
Patients with relapsing-remitting multiplesclerosis age between 18 and 60 years Have a minimum education to perform cognitive tests RRMS (2017 Revisions of the "McDonald" Criteria) At least 2 years have passed since the definitive diagnosis of the disease Receiving first-line injectable and oral disease modifying drugs (interferon beta, glatiramer acetate, triflunomide and dimethyl fumarate) Type and dose of DMD have not changed in the last six months Have not received corticosteroids in last 30 days Have not relapse in the last 60 days Expanded Disability Status Scale (EDSS) scores of 5.5 or less Voluntarily participated in the present study

Exclusion criteria:
History of drug or alcohol abuse in the last six months Pregnancy and lactation Having any acute or major mental disorder that is not under control (type of medication and amount of use in the last three months is constant) Having any seizure disorder History of any suicide attempt Chronic kidney disease (Estimated glomerular filtration rate less than 60 ml / min) Diabetes, hypothyroidism and anemia that is not under control Concomitant use of drugs that may affect cognitive function, such as antipsychotics, modafinil, methylphenidate, amphetamine and amphetamine-like compounds, tricyclic antidepressants and anticonvulsants other than gabapentin and pregabalin, benzodiazepines other than as sleeping pills Avar (if the dose and method of medication do not change in the last three months and during the study will not be prohibited).

Age
From **18 years** old to **60 years** old

Gender
Both

Phase
3

Groups that have been masked

- Participant
- Care provider
- Investigator
- Outcome assessor
- Data analyser

Sample size
Target sample size: **88**

Randomization (investigator's opinion)
Randomized

Randomization description
Patients with relapsing-remitting MS will be divided into two groups by quadruple block randomization. Random sequencing is performed by an epidemiologist using the online program at https://www.sealedenvelope.com/ Hiding is also guaranteed using the block randomization method.

Blinding (investigator's opinion)
Double blinded

Blinding description
The study is a double-blind study and for this purpose, the participants, the main researcher, the health care personnel who are responsible for caring for the patient, do not know which participant received the main drug and which placebo. The end of the evaluation of the results between the two groups will be statistically analyzed.The main researcher is aware of the drug and the placebo of the cans, but remains blind as to which patient receives which drug code.

Placebo
Used

Assignment
Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee
Research Ethics Committee of Tehran University of Medical Sciences

Street address
Tehran, Enghelab Square, 16 Azar St., University of Medical Sciences

City
Tehran

Province
Tehran

Postal code
1417614411

Approval date
2021-08-02, 1400/05/11

Ethics committee reference number
IR.TUMS.MEDICINE.REC.1400.515

Health conditions studied

1

Description of health condition studied
Relapsing-remitting multiple sclerosis

ICD-10 code
G35

ICD-10 code description
Multiple sclerosis

Primary outcomes

1

Description
Minimal Assessment of Cognitive Function In Multiple Sclerosis (MACFIMS)
Timepoint
Beginning of study and end of week 16
Method of measurement
MACFIMS questionnaire

2

Description
California Verbal Learning Test (CVLT)
Timepoint
Beginning of study and end of week 16
Method of measurement
California Verbal Learning Test (CVLT)

3

Description
Brief Visuospatial Memory Test Revised (BVMT)
Timepoint
Beginning of study and end of week 16
Method of measurement
Brief Visuospatial Memory Test Revised (BVMT)

4

Description
Paced Auditory Seaial Addition Test(PASAT)
Timepoint
Beginning of study and end of week 16
Method of measurement
Paced Auditory Seaial Addition Test(PASAT)

5

Description
Symbol Digit Modalitis Testing(SDMT)
Timepoint
Beginning of study and end of week 16
Method of measurement
Symbol Digit Modalitis Testing(SDMT)

6

Description
Delis-Kaplan Executive Function System(D-KEFS)
Timepoint
Beginning of study and end of week 16
Method of measurement
Delis-Kaplan Executive Function System(D-KEFS)

7

Description
Controlled Oral Word Association Test(COWAT)
Timepoint
Beginning of study and end of week 16
Method of measurement
Controlled Oral Word Association Test(VCOWAT)

8

Description
Judgment of Line Orientation(JLO)
Timepoint
Beginning of study and end of week 16
Method of measurement
Judgment of Line Orientation(JLO)

Secondary outcomes

1

Description
Neuropsychiatry Complications of levetiracetam
Timepoint
The end of the fourth and sixteenth week
Method of measurement
Neuropsychiatry Inventory (NPI)

2

Description
Possible side effects of Levetiracetam
Timepoint
Every two weeks until the end of 16 weeks
Method of measurement
Case report form (CRF)

3

Description
White blood cells from blood cells and part of the immune system
Timepoint
Beginning of study and end of week 16
Method of measurement
Blood test

4

Description
Hemoglobin
Timepoint
Beginning of study and end of week 16
Method of measurement
Blood test

5

Description
Platelet
Timepoint
Beginning of study and end of week 16
Method of measurement
Blood test

6

Description

Alanine amino trans ferase (ALT)

Timepoint

Beginning of study and end of week 16

Method of measurement

Blood test

7

Description

Aspartate amino transferase

Timepoint

Beginning of study and end of week 16

Method of measurement

Blood test

8

Description

Cratinine

Timepoint

Beginning of study and end of week 16

Method of measurement

Blood test

9

Description

Blood urea nitrogen (BUN)

Timepoint

Beginning of study and end of week 16

Method of measurement

Blood test

Intervention groups

1

Description

Intervention group: Patients in the case group are treated with Levetiracetam for 16 weeks from a reputable Abidi Pharmaceutical Factory. The initial dose is 250 mg (half a tablet) twice a day. 500 mg is added to the daily dose every week, and finally the dose of the drug reaches 1000 mg twice a day.

Category

Treatment - Drugs

2

Description

Control group: Patients in the control group are treated for 16 weeks with a placebo of Levetiracetam prepared by a Abidi Pharmaceutical Factory (Matching placebo). The initial dose of placebo is 250 mg (half a tablet) twice a day. 500 mg is added to the daily dose every week, and finally the dose of the drug reaches 1000 mg twice a day.

Category

Treatment - Drugs

Recruitment centers

1

Recruitment center

Name of recruitment center

Sina Hospital MS Research Center

Full name of responsible person

Hooshyar Honarmand

Street address

Sina Hospital, Imam Khomeini St, Hasan Abad Sq

City

Tehran

Province

Tehran

Postal code

1136746911

Phone

+98 21 0216 3120

Fax

+98 21 6634 8587

Email

hosp_sina@sina.tums.ac.ir

Web page address

http://sinahospital.tums.ac.ir/

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Tehran University of Medical Sciences

Full name of responsible person

Hooshyar Honarmand

Street address

Valiasr Square, Keshavarz Boulevard, 16 Azar St., Poursina St.

City

Tehran

Province

Tehran

Postal code

۱۴۱۷۶۱۴۴۱۱

Phone

+98 21 81631

Email

tumspr@tums.ac.ir

Grant name

Grant code / Reference number

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

Yes

Title of funding source

Tehran University of Medical Sciences

Proportion provided by this source

100

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

Academic

Person responsible for general inquiries

Contact

Name of organization / entity
Tehran University of Medical Sciences

Full name of responsible person
Hooshyar Honarmand

Position
Associate professor

Latest degree
Specialist

Other areas of specialty/work
Pharmacotherapy

Street address
Sina Hospital, Imam Khomeini St, Hasan Abad Sq

City
Tehran

Province
Tehran

Postal code
1136746911

Phone
+98 21 8832 2025

Email
Hooshyar1978@gmail.com

Person responsible for scientific inquiries

Contact

Name of organization / entity
Tehran University of Medical Sciences

Full name of responsible person
Hooshyar Honarmand

Position
Assistant Professor

Latest degree
Medical doctor

Other areas of specialty/work
Pharmacotherapy

Street address
Sina Hospital, Imam Khomeini St, Hasan Abad Sq

City
Tehran

Province
Tehran

Postal code
1136746911

Phone
+98 21 8832 2025

Email
Hooshyar1978@gmail.com

Person responsible for updating data

Contact

Name of organization / entity
Tehran University of Medical Sciences

Full name of responsible person
Hooshyar Honarmand

Position
Assistant Professor

Latest degree
Medical doctor

Other areas of specialty/work
Pharmacotherapy

Street address
Sina Hospital, Imam Khomeini St, Hasan Abad Sq

City
Tehran

Province
Tehran

Postal code
1136746911

Phone
+98 21 8832 2025

Email
Hooshyar1978@gmail.com

Sharing plan

Deidentified Individual Participant Data Set (IPD)
No - There is not a plan to make this available

Justification/reason for indecision/not sharing IPD
According to the items mentioned in the informed consent, patients' information will not be disseminated.

Study Protocol
Yes - There is a plan to make this available

Statistical Analysis Plan
Yes - There is a plan to make this available

Informed Consent Form
Yes - There is a plan to make this available

Clinical Study Report
Yes - There is a plan to make this available

Analytic Code
No - There is not 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
Patient demographic data as well as variable outcome data will be shared after patients are unidentifiable.

When the data will become available and for how long
The data will be available after the study and is expected to be available on the Internet from March 2022.

To whom data/document is available
Medical activists

Under which criteria data/document could be used
The data will be available after obtaining the necessary permits from researchers.

From where data/document is obtainable
Tehran university of medical science

What processes are involved for a request to access data/document
A written request for data must be submitted by the individual.

Comments