Clinical Trial Protocol
Iranian Registry of Clinical Trials

10 Jun 2026

The analgesic effect of metformin in patients with fibromyalgia

Protocol summary

Study aim
Determination of the analgesic effect of metformin in patients with fibromyalgia

Design
Randomized, double blinded trial, phase 3, on 30 patients with fibromyalgia, with one control and two intervention groups, which are parallel. Randomization is by block method.

Settings and conduct
Research would take place in Booali hospital of Tehran but patients detection will not be limited to Azad University hospitals and some other hospitals would be added if needed. Patient's initial condition would be assessed by two valid questionnaire (Revised Fibromyalgia Impact Questionnaire (FIQR) and Toronto Clinical Neuropathy Scoring System (TCNS)) and some physical examinations. Then, they would be randomly placed in each of three groups. After a 3-month trial and reassessment of patients, the results before and after interventions would be compared. The trial is double blinded (outcome assessor and data analyser).

Participants/Inclusion and exclusion criteria
Inclusion Cr: American College of Rheumatology criteria for Fibromyalgia diagnosis - Not using any medication for fibromyalgia and metformin / Exclusion Cr: Comorbid disorders including history of CVD, RA, untreated endocrine abnormalities (except diabetes), autoimmune conditions, neuromuscular diseases, active malignancy, immunodeficiency, advanced renal failure - Taking medications associated with IR such as glucocorticoids, thiazide diuretics, atypical anti-psychotics, beta-blockers, niacin, statins and NSAID - Drug or alcohol abuse - Opium addiction or cigarette smoking - Using any medication for fibromyalgia and metform

Intervention groups
A. Standard medication of fibromyalgia including either Norepinephrine Reuptake Inhibitors or Membrane Stabilizing agents (control group) B. metformin alone C. Combination therapy with both medications

Main outcome variables
Fibromyalgia severity, Pain severity, Neuropathy severity, Tender points

General information

Reason for update
According to the method of blinding which includes the outcome assessor and the data analyser, I changed the type of blinding from single blinding to double blinding.

Acronym

IRCT registration information
IRCT registration number: **IRCT20210306050589N1**
Registration date: **2021-04-28, 1400/02/08**
Registration timing: **prospective**

Last update: **2021-05-02, 1400/02/12**
Update count: **1**

Registration date
2021-04-28, 1400/02/08

Registrant information

Name
Smaeil Shekari

Name of organization / entity

Country
Iran (Islamic Republic of)

Phone
+98 21 3660 4854

Email address
shekari.es.1973@gmail.com

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2021-06-22, 1400/04/01

Expected recruitment end date
2021-09-23, 1400/07/01

Actual recruitment start date
empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

The analgesic effect of metformin in patients with fibromyalgia

Public title

The effect of metformin in fibromyalgia

Purpose

Treatment

Inclusion/Exclusion criteria

Inclusion criteria:

American College of Rheumatology criteria for Fibromyalgia diagnosis Not using any medication for fibromyalgia and metformin

Exclusion criteria:

Comorbid disorders including history of cerebrovascular disease, rheumatoid arthritis, untreated endocrine abnormalities(except diabetes), autoimmune conditions, neuromuscular diseases, active malignancy, immuno-deficiency, advanced renal failure Taking medications associated with insulin resistance such as glucocorticoids, thiazide diuretics, atypical anti-psychotics,beta-blockers, niacin, statins and NSAID Drug or alcohol abuse Opium addiction or cigarette smoking Using any medication for fibromyalgia and metformin

Age

No age limit

Gender

Both

Phase

3

Groups that have been masked

- Care provider
- Investigator
- Outcome assessor
- Data analyser

Sample size

Target sample size: **30**

Randomization (investigator's opinion)

Randomized

Randomization description

Randomization method would be based on block randomization with the block size of 3. For each possible cases numbers are assigned as mentioned below: ABC(1), ACB(2), BAC(3), BCA(4), CAB(5), CBA(6) Then a number between 1-6 would be assigned for each block using random number table, so that the therapeutic group for each participant is determined.

Blinding (investigator's opinion)

Double blinded

Blinding description

A person other than the main researcher of the project determines the intervention and control groups with the name of A, B and C, put the medications in appropriate boxes with the name of group and provide them to the main researcher as they are sealed. In fact, the main researcher who acs the role of clinical care giver, outcome assessor and data analyst as well, would be unaware of the patients assignment to either control or intervention group until the end of the project. And would only deal with the group names A, B and C and also would not know the patients' name during clinical care in order to prevent possible bias of the project.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of Tehran Islamic Azad University of Medical Science

Street address

Islamic Azad University of Medical Sciences, Tehran Branch, Khaghani St, Shariati Ave

City

Tehran

Province

Tehran

Postal code

1916893813

Approval date

2021-01-18, 1399/10/29

Ethics committee reference number

IR.IAU.TMU.REC.1399.459

Health conditions studied

1

Description of health condition studied

Fibromyalgia

ICD-10 code

M79.7

ICD-10 code description

Fibromyalgia

2

Description of health condition studied

Idiopathic peripheral autonomic neuropathy

ICD-10 code

G90.0

ICD-10 code description

Idiopathic peripheral autonomic neuropathy

Primary outcomes

1

Description

Pain severity

Timepoint

At the first visit and 3 month after the beginning of interventions

Method of measurement

Numeric Pain Rating Scale (NPRS)

2

Description

Fibromyalgia severity

Timepoint

At the first visit and 3 month after the beginning of interventions

Method of measurement

Revised Fibromyalgia Impact Questionnaire (FIQR)

3

Description

Tender points

Timepoint

At the first visit and 3 month after the beginning of interventions

Method of measurement

Counting

Secondary outcomes

1

Description

Neuropathy severity

Timepoint

At the first visit and 3 month after the beginning of interventions

Method of measurement

Toronto Clinical Neuropathy Scoring System (TCNS)

Intervention groups

1

Description

Control group (group A): The control group would be on the treatment with the standard medication of fibromyalgia (based on the latest available guidelines) including either Norepinephrine Reuptake Inhibitors (amitriptyline ,duloxetine or milnacipran) or Membrane Stabilizing agents (pregabalin or gabapentin). The duration of treatment would be 3 month. (For most patients we would prescribe Amitriptyline (with the initial dose of 5-10 mg/d 3 hour before bedtime and gradually increasing the dose to 25-50 mg/d if needed and tolerated). If there is sever fatigue or depression in patients we would use either Duloxetine (with the initial dose of 20-30 mg/d in the morning and gradually increasing the dose to 60 mg/d) or Milnacipran (with initial dose of 12.5 mg/d in the morning and gradually increasing the dose to 50-100 mg twice daily if needed and tolerated) and occasionally if there is sever sleep disturbance we would use either Pregabalin (with initial dose of 25-50 mg/d at bedtime and gradually increasing the dose to 300-450 mg/d if needed and tolerated) or Gabapentin (with initial dose of 100 mg/d at bedtime and gradually increasing the dose to 1200-2400 mg/d in divided doses if needed and tolerated)) Predicted Pharmaceutical companies: Amitriptyline: Pars Darou, Duloxetine: Dr. Abidi , Pregabalin: Sobhan Darou, Gabapentin: Razak. Because Milnacipran is not made in Iranian companies, we use Duloxetine instead.

Category

Treatment - Drugs

2

Description

First ntervention group (group B): The first intervention group would be on the treatment with metformin alone. The duration of treatment would be 3 month. (Metformin would be prescribed with the initial dose of 500 mg/d, and would be increased gradually until it reaches 1500 mg/d (the effective dose) if tolerated.) Predicted Pharmaceutical companies: Metformin: Razak

Category

Treatment - Drugs

3

Description

Second intervention group (group C): The second intervention group would be on the combination therapy with both medications, standard medication of fibromyalgia and metformin together, according to the order of these two groups. The duration of treatment would be 3 month. Predicted Pharmaceutical companies: Amitriptyline: Pars Darou, Duloxetine: Dr. Abidi , Pregabalin: Sobhan Darou, Gabapentin: Razak, Metformin: Razak.

Category

Treatment - Drugs

Recruitment centers

1

Recruitment center

Name of recruitment center

Booali hospital

Full name of responsible person

Sara Hallaji

Street address

At the beginning of Damavand Blv, Imam Hossein Sq.

City

Tehran

Province

Tehran

Postal code

1711734353

Phone

+98 21 3334 8036

Fax

+98 21 3378 6182

Email

sahano1997@gmail.com

Web page address
http://bouali.iautmu.ac.ir

2

Recruitment center

Name of recruitment center
Amir Al-Momenin hospital

Full name of responsible person
Sara Hallaji

Street address
In front of Sardar Jangal Park, Shirmohammadi St, Naziabad town

City
Tehran

Province
Tehran

Postal code
1811694784

Phone
+98 21 5534 6550

Fax
+98 21 5534 6301

Email
sahano1997@gmail.com

Web page address
http://amhos.iautmu.ac.ir

Sponsors / Funding sources

1

Sponsor

Name of organization / entity
Islamic Azad University

Full name of responsible person
Farshad Hashemiyan

Street address
Islamic Azad University of Medical Sciences, Tehran Branch, Khaghani St, Shariati Ave

City
Tehran

Province
Tehran

Postal code
1916893813

Phone
+98 21 2200 6660

Fax
+98 21 2200 4781

Email
chancellor@iautmu.ac.ir

Web page address
http://www.iautmu.ac.ir

Grant name

Grant code / Reference number

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

Title of funding source
Islamic Azad University

Proportion provided by this source
100

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

Person responsible for general inquiries

Contact

Name of organization / entity
Islamic Azad University

Full name of responsible person
Sara Hallaji

Position
Medical student

Latest degree
A Level or less

Other areas of specialty/work
General Practitioner

Street address
Unit 2, 1st floor, Shahid Yazdanfar St, Sohanak Ave, Artesh Blvd

City
Tehran

Province
Tehran

Postal code
1955816453

Phone
+98 21 2246 0179

Email
sahano1997@gmail.com

Person responsible for scientific inquiries

Contact

Name of organization / entity
Islamic Azad University

Full name of responsible person
Sara Hallaji

Position
Medical student

Latest degree
A Level or less

Other areas of specialty/work
General Practitioner

Street address
Unit 2, 1st floor, Shahid Yazdanfar St, Sohanak Ave, Artesh Blvd

City
Tehran

Province
Tehran

Postal code
1955816453

Phone
+98 21 2246 0179
Email
sahano1997@gmail.com

Person responsible for updating data

Contact
Name of organization / entity
Islamic Azad University
Full name of responsible person
Sara Hallaji
Position
Medical student
Latest degree
A Level or less
Other areas of specialty/work
General Practitioner
Street address
Unit 2, 1st floor, Shahid Yazdanfar St, Sohanak Ave, Artesh Blvd
City
Tehran
Province
Tehran
Postal code
1955816453
Phone
+98 21 2246 0179
Email
sahano1997@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
There is no plan to publish it.
Study Protocol
No - There is not a plan to make this available
Statistical Analysis Plan
No - There is not a plan to make this available
Informed Consent Form
No - There is not a plan to make this available
Clinical Study Report
No - There is not a plan to make this available
Analytic Code
Not applicable
Data Dictionary
Not applicable