

Clinical Trial Protocol

Iranian Registry of Clinical Trials

10 Jun 2026

A randomized controlled trial comparing the effects of β -D-Mannuronic acid and immunosuppressive drugs on disease activity and inflammatory markers in patients with Rheumatoid Arthritis

Protocol summary

Summary

Following to get an official approval for assessment of therapeutic effect of β -D-Mannuronic acid on Ankylosing Spondylitis with the Irct registration number : IRCT2013062213739N1 at the level of Clinical Trial Phase I from Ministry of Iranian Health and Medical Education, a Clinical Trial of this drug was designed in patients with Rheumatoid Arthritis. The aim of this study is to assess the safety and effectiveness of β -D Mannuronic acid in patients with Rheumatoid Arthritis. β -D-Mannuronic acid an anti-inflammatory agent that belongs to the family of nonsteroidal anti-inflammatory drugs. This drug has shown therapeutic effects with the greatest tolerability and safety in various experimental models such as experimental model of MS, rheumatoid arthritis, nephrotic syndrome and acute glomerulonephritis. In this randomized, controlled trial, thirty five patients with Rheumatoid Arthritis fulfilling the American College of Rheumatology Diagnostic Criteria that have active disease will be examined. Additionally, patients do not have other concomitant diseases (Hepatic, renal and cardiovascular) or malignancies. Written informed consent will be obtained. Patients will be randomly assigned to receive either β -D Mannuronic acid (treatment group, 25 patients) 1500 mg/day (three 500 mg tablets/day) or immunosuppressive drugs (control group, 10 patients) orally for 12 weeks. Medical history, clinical parameters , serum level of CRP, ESR, RF, Anti CCP and also the frequencies of circulating Th17 cells and regulatory T cells, L- selectin expression and leukocyte function-associated antigen-1 (LFA-1) expression will be evaluated at baseline and 12 weeks after treatment.

General information

Acronym

IRCT registration information

IRCT registration number: **IRCT2014011213739N2**

Registration date: **2014-05-16, 1393/02/26**

Registration timing: **prospective**

Last update:

Update count: **0**

Registration date

2014-05-16, 1393/02/26

Registrant information

Name

Abbas Mirshafiey

Name of organization / entity

Tehran University of Medical Sciences

Country

Iran (Islamic Republic of)

Phone

+98 21 8895 4913

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Recruitment status

Recruitment complete

Funding source

Vice-Chancellor for Research, Tehran University of Medical Sciences and Rheumatology Research Center, Tehran University of Medical Sciences

Expected recruitment start date

2014-07-20, 1393/04/29

Expected recruitment end date

2015-07-20, 1394/04/29

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

A randomized controlled trial comparing the effects of β -D-Mannuronic acid and immunosuppressive drugs on disease activity and inflammatory markers in patients with Rheumatoid Arthritis

Public title

The therapeutic effects of β -D-Mannuronic acid in patients with Rheumatoid Arthritis

Purpose

Basic science

Inclusion/Exclusion criteria

Inclusion Criteria: 25-60 years old patients diagnosed with RA according to American College of Rheumatology Diagnostic Criteria after the initial visit by a specialist in rheumatology and parameters ESR, RF, CRP and Anti-CCP elected. Also each patient must sign written informed consent. Exclusion Criteria: History of fever and infectious diseases, positive pregnancy test or lactation, other collagen-vascular diseases, other auto-immune diseases, malignancies, patients have enrolled another Clinical Trial study within last 4 weeks, other concomitant diseases (Hepatic, renal, haematological, gastrointestinal, endocrine, cardiovascular, pulmonary, neurological or cerebral disease)

Age

From **25 years** old to **60 years** old

Gender

Both

Phase

1-2

Groups that have been masked

No information

Sample size

Target sample size: **35**

Randomization (investigator's opinion)

Randomized

Randomization description

Blinding (investigator's opinion)

Double blinded

Blinding description

Placebo

Not used

Assignment

Parallel

Other design features

1- In this study the patients and outcomes assessor do not know which β -D Mannuronic acid or immunosuppressive drugs is being given (double-blind). 2- In this study randomization will be performed by stratified randomization method. 3- β -D Mannuronic acid was extracted from Alginic acid sodium salt (Sigma, A2033-1Kg) as a reference sample. This extraction method is a modified procedure of acid hydrolysis method (Chhatbar et al. 2009) that is being performed in Department of Pathobiology, Division of Immunology, School of Public Health, Tehran University of Medical Sciences.

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics Committee of Tehran University of Medical Sciences

Street address

6th floor, Headquarter for Tehran University of Medical Sciences, on the corner of Keshavarz Blvd. And Qods Street, Keshavarz Blvd., Tehran, Iran.

City

Tehran

Postal code

Approval date

2014-01-15, 1392/10/25

Ethics committee reference number

130/2392/92/3

Health conditions studied

1

Description of health condition studied

Rheumatoid Arthritis

ICD-10 code

M05

ICD-10 code description

Seropositive Rheumatoid Arthritis

Primary outcomes

1

Description

Severity of disease

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Taking history and Questionnaire

2

Description

Morning stiffness

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Taking history and Questionnaire

3

Description

The number of swollen joints

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Examination

4

Description

Pain

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Examination

Secondary outcomes

1

Description

Serum level of CRP

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Turbidometry

2

Description

The frequency of circulating Th17 cells

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Flow cytometry

3

Description

The frequency of circulating regulatory T (Treg) cells

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Flow cytometry

4

Description

L- selectin expression

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Flow cytometry

5

Description

LFA-1 expression

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Real-time PCR

6

Description

Serum level of IL-6

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Elisa

7

Description

Serum level of IL-10

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Elisa

8

Description

Serum level of IL-17A

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Elisa

9

Description

Serum level of TNF- α

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Elisa

10

Description

Erythrocyte Sedimentation Rate (ESR)

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Millimeters per hour

11

Description

Anti-cyclic Citrullinated Peptide (anti-CCP) Antibodies

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Serological tests

12

Description

Rheumatoid factor (RF)

Timepoint

At baseline and after 12 weeks of treatment

Method of measurement

Serological tests

Intervention groups

1

Description

Treatment group will receive 1500 mg/day (three 500 mg tablets/day) of β -D Mannuronic acid orally for 12 weeks.

Category

Treatment - Drugs

2**Description**

Control group will receive immunosuppressive drugs orally for 12 weeks

Category

Treatment - Drugs

Recruitment centers**1****Recruitment center****Name of recruitment center**

Rheumatology Research Center, Tehran University of Medical Sciences

Full name of responsible person

Dr. Mahdi Mahmoudi (PhD- Assistant Professor)

Street address

Rheumatology Research Center, Dr. Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran

City

Tehran

Sponsors / Funding sources**1****Sponsor****Name of organization / entity**

Vice-Chancellor for Research, Tehran University of Medical Sciences

Full name of responsible person

Dr. Masood Younesian (MD, PhD, Vice-Chancellor for Research, Tehran University of Medical Sciences)

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City

Tehran

Grant name**Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

Yes

Title of funding source

Vice-Chancellor for Research, Tehran University of Medical Sciences

Proportion provided by this source**Public or private sector***empty***Domestic or foreign origin***empty***Category of foreign source of funding***empty***Country of origin****Type of organization providing the funding***empty***2****Sponsor****Name of organization / entity**

Rheumatology Research Center, Tehran University of Medical Sciences

Full name of responsible person

Dr. Farhad Gharibdoost(MD, Professor)

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City

Tehran

Grant name**Grant code / Reference number****Is the source of funding the same sponsor organization/entity?**

Yes

Title of funding source

Rheumatology Research Center, Tehran University of Medical Sciences

Proportion provided by this source**Public or private sector***empty***Domestic or foreign origin***empty***Category of foreign source of funding***empty***Country of origin****Type of organization providing the funding***empty***Person responsible for general inquiries****Contact****Name of organization / entity**

Department of Pathobiology, School of Public Health, Tehran University of Medical Sciences

Full name of responsible person

Dr. Abbas Mirshafiey

Position

Head of the Department of Pathobiology (PhD - Professor)

Other areas of specialty/work**Street address**

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Web page address**Person responsible for scientific inquiries****Contact****Name of organization / entity**

Department of Pathobiology, School of Public Health,
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Full name of responsible person

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Position

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Person responsible for updating data

Contact

Sharing plan

Deidentified Individual Participant Data Set (IPD)

empty

Study Protocol

empty

Statistical Analysis Plan

empty

Informed Consent Form

empty

Clinical Study Report

empty

Analytic Code

empty

Data Dictionary

empty